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NIAGARA
*Queen of
Wonders*

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EDWARD T. WILLIAMS

Managing Editor of the Niagara Falls Journal for 11 years, and Industrial Agent of the City of
Niagara Falls 1911-12-13-14-15

NIAGARA

QUEEN OF WONDERS

A Graphic History of the Big Events in Three Centuries Along the Niagara Frontier, One of the Most Famous Regions in the World, Including Early Explorations, Early Fascinating Literature, Early Wars, and the First and Greatest Electrical Power Development, a Discussion of and Data Pertaining to the Large Subject of the Conservation of Natural Resources, of Nation-Wide Interest, Together with the Creation and the Development of the City of Niagara Falls

BY

EDWARD THEODORE WILLIAMS

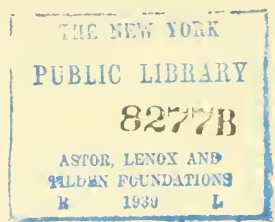
President Niagara Frontier Historical Society
Eleven Years Managing Editor of the *Niagara Falls Journal*, and
Five Years City Industrial Agent of
Niagara Falls, New York



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BY
EDWARD T. WILLIAMS
Niagara Falls, N. Y.

PREFACE

TO the people of the Niagara Frontier, one of the most famous, prosperous and promising regions in the United States, in which I was born and have always lived and where four generations of my family have lived, this book is dedicated. The facts warrant it and my impulse is to make "Niagara—Queen of Wonders" the finest and most comprehensive publication ever issued relating to a single community. Nature has wrought here its most marvelous work. With such an inspiration, man has accomplished here, with Nature as his handmaiden, some of the greatest achievements of any age. Therefore, while the book pertains to a locality, its contents are of nation-wide and world-wide concern. The illustrations are among the best specimens of the engraver's art and the subjects are incomparable.

The text is fascinating and of tremendous import. First the absolutely unique early history of the Niagara Frontier beginning with the struggles between the French and English for its control. The region has been under three flags. The Lilies of France, the Roses of England and the Stars and Stripes have all played a large part here. The romantic experiences of early explorers stage large along the Niagara River. The commerce of the unsalted seas of the United States was born here. This was the principal battleground of the war of 1812 between the United States and Great Britain. The Imperial State of New York exercised here its power of eminent domain, and it made free to all mankind forever the enjoyment of the world's greatest natural spectacle. Then science stepped in and without injuring the scenic spectacle converted Niagara's mighty moving flood to the largest use of human kind. The first and greatest electrical power development on earth has its site at Niagara and no man can forecast how much greater it will be as science advances. The progress of the past quarter of a century has been beyond the dreams of the greatest optimist. The details are related in this book, coupled with the fascinating history of the pioneer days when deNonville peered through the primeval forest, Hennepin caught the first white man's vision of the mighty

cataraets, and LaSalle built the first ship to sail the upper lakes. The native red man started from these shores on his sorrowful journey toward the setting sun.

The City of Niagara Falls was erected here to become in less than a quarter of a century the chief industrial community of the early Genesee country herein described, outside of Buffalo and Rochester. In many ways the eyes of the civilized world are turned toward Niagara Falls. In scenic grandeur, in entrancing historieal events to which the mystic chords of memory lead, in various lines of industrial effort in which the electric furnace plays large part, and roseate promises for a great future worthy of the highest aspirations of man, Niagara, like the name of Abou Ben Adhem, leads all the rest.

THE AUTHOR.

CHAPTER I

NIAGARA—QUEEN OF WONDERS

The World's Greatest Natural Spectacle Compared with Numerous
Other Exalted Scenes. Peerless Niagara was not
Created for Beauty Alone

NIAGARA! Magic name! Most sublime spectacle on earth. The contemplation of the handiwork of Nature is a matter of comparison. We conjure up in our minds a picture of some famous spectacle, and then when we actually see it, we may be disappointed. Imagination and reality do not always harmonize. For instance, Norway is in the Arctic Circle, and the conclusion would naturally be that the climate is like that of Greenland, but, as a matter of fact, Norway is one of the most wonderful countries on the globe, not only because of its magnificent scenery, but because Nature saves it as a habitation for the race by sending thither the mysterious gulf stream, which crosses the Atlantic Ocean for five thousand miles and fulfills its mission transforming, by its still, warm breath, an otherwise barren region.

Throughout the world there are marvelous creations of Nature that inspire admiration and awe. The Grand Canyon of Colorado; the marvelous Yellowstone Park; the Mammoth Cave of Kentucky; the Palisades of the Hudson; the 33,000 islands of the Georgian Bay; the Thousand Islands and the Laurentian Hills of the St. Lawrence River that carries the waters of our five unsalted seas; the classic Mediterranean and Ægean Seas; the Headlands of the Plains of Ancient Troy; the Land of the Alhambra; the Sands of the Desert of Sahara; the Sacred Coast of Palestine; the Grecian Islands, consecrated by Homeric legend; the Bosphorous, most attractive harbor in the

world, uniting the Orient and the Occident; the Grand Canal of Venice; the Cedars of Lebanon; the Mount of Olives; the Dead Sea; the Wilderness of Judea; Egypt, the oldest born of time; the Sacred Mountain of Japan, Fuja-Yama; the glorious harbor of Hong Kong; Greenland's icy mountains; India's coral strand; the Ganges, which surpasses all other rivers in sanctity; the Mississippi, "Father of Waters"; the Himalayas, "Halls of Snow," loftiest range of mountains on the globe; Mount Everest, highest single peak in the world; the castle-bordered Rhine; the Black Forest of Germany; the awe-inspiring grandeur of the stupendous Norway gorges; the Jordalsnut, a gigantic, silvery feldspar thimble-shaped mountain in Norway; the imposing Romsdalthorn; the Jungfrau, queen of Alpine heights; Mount Blanc, monarch of mountains; the frowning Matterhorn; the Alpine waterfall, Geissbach; and monstrous glaciers creeping out from their icy lairs.

The procession of Nature's marvels throughout the universe, which charm, mystify, and inspire the almost inexpressible admiration of mankind, is almost limitless. When all have been seen and described, the traveler, the writer and the lover of nature pauses in contemplation of the greatest, the most beautiful and the most famous of all, the Cataracts of the Niagara, and their companion wonders, the Rapids and the stupendous Gorge. To this shrine of Nature have come pilgrims from every civilized country on the globe, and their number from the time that the primeval forest, inhabited only by wild beasts, the fowls of the air and the red man surrounded this spectacle, until the twentieth century, when man has harnessed some of the almost limitless power that has gone down to the sea unused, is countless millions.

"Enthroned in might Jehovah spake,
And bade creation's morn awake;
Sprang forth the light with quickening ray,
And brooding darkness fled away.
And thus Niagara's race began
Without the voice or aid of man!
Its flowing waters crowned with spray,
Have never faltered on their way."

The glories of Niagara have reached the uttermost parts of the earth. The mighty ocean and the pleasant land; the moun-



tains that tower above the plains; the other rivers that run down to the sea; Gibraltar, the Matterhorn, and the blue expanse of the Mediterranean—all the works of the Omnipotent, whether land or sea, and all that in them is, become of secondary importance when the highest work of creation—man—gazes upon the world's greatest cataracts and fully realizes their potentialities.

By the same token the six great aqueducts and the splendid architecture of ancient Rome; the massive pyramids of Egypt; the man-made glories of ancient Greece; all of the stupendous accomplishments wrought by the brain and hand of man in the century last past are exceeded by the significance of the results of Niagara harnessed. No man can measure what it means to this and succeeding generations. It initiated and chiefly maintains the electrical age.

Who shall say that there was placed in this favored region peerless Niagara for beauty alone? Niagara's purpose is twofold: beauty and utility clasp hands, as it were, and move forward to the goal of human happiness; mankind is uplifted spiritually and immensely benefitted materially. And Niagara flows on forever!

The Niagara frontier is a beauty spot world renowned. It is the greatest illustration of the futility of painting the lily and gilding refined gold. In the ages that are past, it was the abode of

"The poor Indian, whose untutored mind
Sees God in clouds, and hears Him in the wind."

More than two hundred years ago, French missionaries explored it, and Father Hennepin first viewed the Mighty Thunderer, while LaSalle built the first ship to sail the upper lakes. One hundred years ago it was the chief theatre in a great war, and bloody battles were fought at Fort Erie, Chippewa, Lundy's Lane and Queenston between contending armies speaking the same tongue. Today the swiftly flowing flood that forms the boundary between the two great nations has been harnessed by the genius of man, and the Niagara frontier is the site of the first and greatest electrical power development on earth, just as the Anglo-Saxon race prepared to celebrate the hundredth anniversary of peace between English-speaking peoples. Today we furnish a striking illustration of the fact

that "Peace hath her victories no less renowned than war." In the reflected glory of a mighty past, we live in a splendid present and move forward to a destiny the magnitude of which no man can measure. What man has done in the conservation of natural resources of the Niagara frontier spells achievement, fulfillment, courage, hope, devotion, sacrifice, inspiration, beauty, faith, opportunity, effort, success and compensation.

Francis Lynde Stetson, the eminent New York lawyer, and a leading official of The Niagara Falls Power Company, eloquently portrays the Niagara Falls and Rapids when he says:

"To souls sensitive to the beautiful and the sublime, the plunging torrent has appealed by the stateliness of its streams, the brilliance of its boisterous rapids, and the deep glassy green of its silent foreboding brink, as well as by its drop into the seemingly infinite depth, from which there comes to him who listens the note of the welcoming abyss, deeper than the diapason of any organ's pipe. To most, the first impression, and to many the enduring impression is that of awe, in which the subjective mood prevails, and a certain sense of personal danger dominates all other thoughts of this mighty moving flood, pouring resistlessly down through the gorge, which, for itself, it has forced through multiplied strata of rock of many ages. Danger there certainly is, and death in this resistless, remorseless tide has been found and also has been sought by hundreds; but notwithstanding its appalling aspect, it is through this very sense of resistless power that the Falls speak to minds of great dignity and self-restraint, and lead them to observe as did Mr. Carter of New York, in his characteristically fine oration at the opening of Niagara Park, that the 'sense which responds to this magnificent motion is the sense of power.' "

For more than two centuries these cataracts have enjoyed a world-celebrity as a stupendous natural spectacle. So far as is known, the first white man to see them was Father Louis Hennepin, a French missionary, in 1678. Previous to that the native Indian with his "untutored mind" was the only one to contemplate the Falls. In exploring the St. Lawrence River in 1603, Champlain heard of the Falls from the Indians, and referred to them in his published report in a very indefinite way, but he never saw them. He can be credited with the first announcement to the world of the existence of Niagara Falls. After

Father Hennepin saw them in 1678, their fame spread, and as civilization advanced, they came to be more and more the wonder and admiration of the world, until now it is estimated that over 1,500,000 people come to view Nature's greatest handiwork every year. Much has been written and said about Niagara. The language has been searched for extravagant or eloquent words to depict the grandeur of the spectacle. It has been the wonderment of sovereigns and rulers of lands, civilized and uncivilized; of persons high in official position; of countries Christian and heathen; of characters of celebrity in art, in literature and in science, in almost every language spoken and written. Poets have exhausted their muse, and prose writers have utilized their most grandiloquent phrases to reflect their impressions of bounteous Nature's most magnificent gift to mankind.

CHAPTER II

EARLY NIAGARA HISTORY

The Struggles Between the French and English for the Control of the Niagara Frontier

IN the Massachusetts historical collection is found a "Description of the Country between Albany and Niagara in 1792." The writer is anonymous, and begins his article by saying that "I am just returned from Niagara, about five hundred and sixty miles west of Boston." Speaking of the Genesee country later in the article, he says:

"Taking a view of this country altogether, I do not know such an extent of ground so good. Cultivation is easy, and the land is grateful. The progress of settlement is so rapid that you and myself may very probably see the day when we can apply these lines to the Genesee country:

"Here happy millions their own lands possess,
No tyrant awes them, nor no lords oppress.'"

"Many times did I break out in an enthusiastic frenzy, anticipating the probable situation of this wilderness twenty years hence. All that reason can ask may be obtained by the industrious hand, the only danger to be feared is that luxuries will flow too cheap."

The Genesee country is described in the "Documentary History of New York" as "the most westerly part of the State of New York, and is situated between three degrees fifty minutes longitude west from New York, and between forty-two degrees and forty-three degrees fifteen minutes north latitude. Its

greatest length from east to west is one hundred and twenty-five miles, and its greatest breadth about ninety-five miles, containing nearly five million acres. It is bounded south on the north boundary of Pennsylvania; north by the southern shore of Lake Ontario; west by the eastern boundary of Presque-Isle (a flourishing settlement in Pennsylvania) eighteen miles; north-west by the southeast shore of Lake Erie, seventy miles; west by the Straits of Niagara upwards of thirty-seven miles; and east by a meridian line running due north from the north boundary of Pennsylvania, at the eighty-second milestone, to the south shore of Lake Ontario."

Standing upon an eminence overlooking a period of nearly three hundred years since it was first known to the white man, we can see that the early writers only scratched the surface as to the possibilities of the so-called Genesee country. Within its boundaries numerous trenchant historical scenes have been enacted, and the general progress of mankind has always been most fully exemplified. Very frequently our locality has been in the vanguard in those things that make for the advancement of humanity.

As a partial explanation of why the English and the French struggled for the control of this region may be cited excerpts from Imlay's "Topographical Description of the Western Territory of North America." Referring to the Genesee tract, he says:

"But the peculiar advantages which distinguished these lands over most of the new settled countries of America are these following: 1. The uncommon excellence and fertility of the soil. 2. The superior quality of the timber, and the advantages of easy cultivation, in consequence of being generally free from underwood. 3. The abundance of grass for cattle in the woods, and on the extensive meadow grounds upon the lakes and rivers. 4. The vast quantities of the sugar maple tree, in every part of the tract. 5. The great variety of other fine timber, such as oak, hickory, black walnut, chestnut, ash of different kinds, elm, butternut and basswood, poplar, pines and also thorn trees of a prodigious size. 6. The variety of fruit trees, and also smaller fruits, such as apple and peach, and orchards in different places, which were planted by the Indians, plum and cherry trees, mulberries, grapes of different kinds, raspberries, huckleberries, blackberries, wild gooseberries, and strawberries in vast

quantities; also cranberries and blackhaws, etc. 7. The vast variety of wild animals and game which is to be found in this country, such as deer, moosedeer, and elk of a very large size, beavers, otters, martins, minks, rabbits, squirrels, raccoons, bears, wildcats, etc., many of which furnish excellent furs and peltry. 8. The great variety of birds for game, such as wild turkeys, pheasants, partridges, pigeons, plovers, heath fowl, and Indian hen, together with a vast variety of water fowl on the rivers and lakes, such as wild geese and ducks of many different kinds not known in Europe. 9. The uncommon abundance of very fine fish, with which the lakes and rivers abound; among which are to be found excellent salmon of two different kinds, salmon-trout, of a very large size, white and yellow perch, sheephead, pike, succors, and eels, of a very large size, with a variety of other fish in their different seasons. 10. The excellence of the climate in that region where these lands are situated, which is less severe in winter, and not so warm in summer, as the same latitudes nearer the sea. The total exemption from all periodic disorders, particularly the fever and ague, which does not prevail in the Genesee country on account of the rising grounds and fine situations. 11. The vast advantages derived from the navigable lakes, rivers and creeks, which intersect and run through every part of this tract of country, affording a water communication from the northern parts of the Grant by the Genesee River one way, or by the Seneca River another way, into the great Lake Ontario, and from thence by cataraqui to Quebec, or by the said Genesee River, the Oneida Lake and Wood Creek to Schenectady on the Mohawk River, with only a short land carriage, and from thence to Albany, with a portage of sixteen miles," etc.

Of course, many of the attractions and inducements for this region mentioned above disappeared with the advancement of civilization and the congestion of population. The prizes of the chase are almost entirely gone. Some of the kinds of fish mentioned above are still in the streams, but the primeval forest is gone and there is comparatively little timber in the old Genesee country now. There could not have been many peach orchards or apple orchards at that time, but there is in our locality now one of the greatest fruit belts in the world. What is now the County of Niagara contains as many or more apple trees than

any other county in the United States. All kinds of fruit that are grown in this climate are abundant here.

What is now known as the Niagara Frontier does not contain the same area as the old Genesee country. It is virtually that territory lying between Lakes Erie and Ontario, and it is a narrow strip generally understood not to extend eastward farther than the boundaries of Niagara and Erie counties. What has been quoted above was written at a comparatively late date. This region received much attention considerably more than one hundred years previous to the year 1792. Quotations have been made as above to show some of the reasons why the French were so anxious to be in possession of this region. The other reasons were of military character, the Niagara River flowing down from Lake Erie and into Lake Ontario formed a strategic military point. That is why a fort was built at the mouth of the Niagara River on the banks of Lake Ontario, and its strategic importance explains why that fort has been under three flags, the French, the English, and the American.

Within the walls of old Fort Niagara there are relics of two and one-half centuries. The United States government has a reservation there of one hundred and eighty-eight acres, and maintains a portion of the army there at all times in the modern buildings; but at the extreme point where the Niagara River enters Lake Ontario are the structures of the ancient fort. In 1669 LaSalle, the French explorer, who constructed at the village bearing his name, just south of the city of Niagara Falls, the Griffon, the first vessel to sail the upper lakes, built the first structure other than an Indian wigwam ever erected on the Niagara Frontier. Again in 1678, the year that Father Hennepin, LaSalle's associate explorer, saw Niagara Falls, the first white man to gaze upon the mighty cataracts, LaSalle built there Fort Conti. That fort was destroyed, and in 1687 deNonville built another fort called after himself. That fort was destroyed by the Seneca Indians the next year. The French, in 1725, erected a stone structure, the foundations of which remain, and are credited with being the oldest existing masonry west of Albany. The French enlarged the fort, but were supplanted by the British in 1759.

Fort Niagara was the center of the history of the middle part of North America for over one hundred years, and during

the eighteenth century its commandant, whether English or French, was the most important man west of New York. In 1770 Major Wynne reported that "Niagara is, without exception, the most important post in America, and secures a greater number of communications, through a more extensive country, than perhaps any other pass in the world." Honorable Peter A. Porter has since added that "no one spot of land in North America has played a more important part in the control, growth and settlement of the great West than the few acres embraced within its fortifications. Its cemetery is the oldest consecrated ground west of Albany." The French rule ended there in 1759. Of course, the British occupation ended there at the close of the War of 1812.

In 1678 Father Hennepin described the great cataracts as a place where "a vast and prodigious cadence of waters falls down after a surprising and astonishing manner in so much that the universe does not afford its parallel." Two hundred and forty years later, in the light and life of the twentieth century, in words that are halting and feeble beside the mighty forces of Nature and of man, in the strength that comes from perfect union, we pay our tribute to the Falls of Niagara! Grandest of Nature's scenes! Noblest of all the works of creation in earthly spectacles. Millions of people from all over the civilized world have gazed upon the great cataracts with wonderment and awe. By the genius of man, beauty and utility have been united. Sentiment and usefulness march side by side, and delight and serve the human race. The one has inspired reverence and admiration; the other is the vanguard of progress. The one is sublime; the other is unequalled. The one is the greatest inspiration of artists and poets; the other is the origin of man's most superb accomplishment.

In one of the letters written in 1792 found in the papers relating to western New York, the writer speaks of the town of Sodus "situated on a bay of the same name, which is well known as the best harbor on the south side of Lake Ontario. Few or none, even on the seacoast exceed it for spaciousness and beauty. The extent of the bay, from north to south, is about six or seven miles, and from east to west, from two to four miles. The grounds around the bay rise considerably high, and the entrance is not above half a mile over." Farther along the same

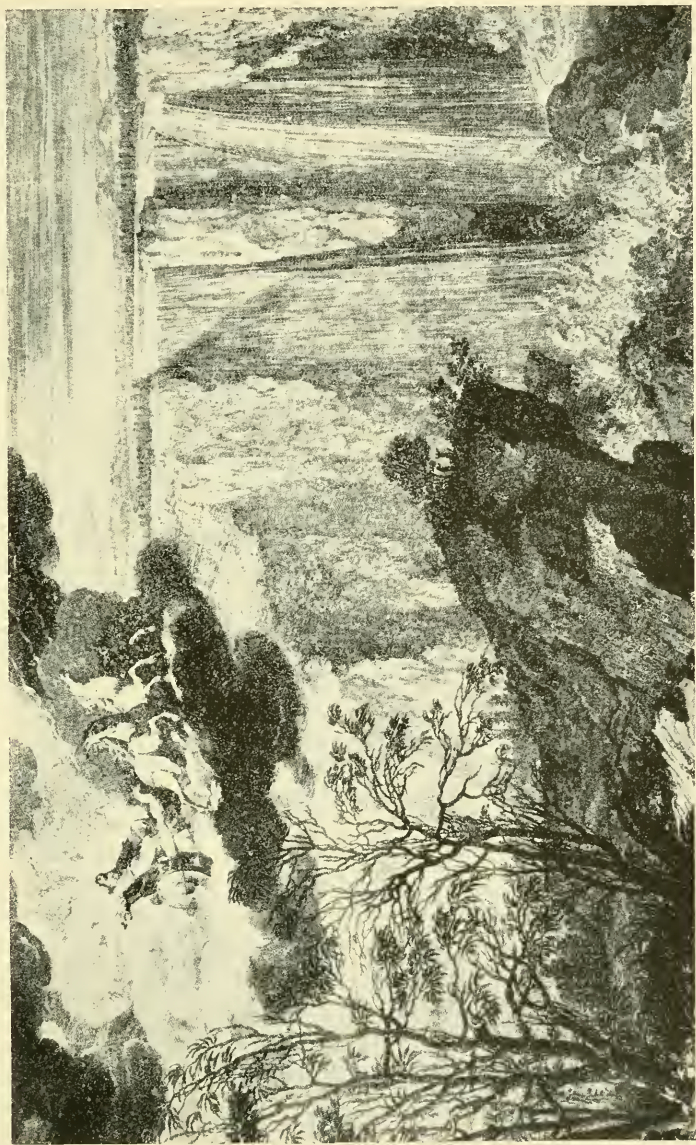
writer says: "The first view of this place, after passing through a timbered country twenty-eight miles strikes the eye of the beholder as one of the most magnificent landscapes human fancy can picture, and the beauty of the scene is not infrequently heightened by the appearance of large vessels navigating the lake. At the sight of these immense bodies of water, the mind of a reflecting man must be struck by admiration. With only the interception of the portage of nine miles at Niagara Falls they may be navigated to the westward at least two thousand miles."

Champlain made an expedition to northern New York in 1609 and to western New York in 1615. He made a map indicating remarkable places represented by all the letters of the alphabet, and then by number up to ninety-six. Number eighty was described as a "very high waterfall at the head of Sault (qu. Lake) St. Louis; descending which various sorts of fishes become dizzy. (Niagara.)"

Upon this subject Honorable Peter A. Porter, the historian of the Niagara Frontier, in a recent pamphlet entitled "Landmarks on the Niagara Frontier," says:

"Frenchmen had been on the Niagara River before 1640. Brule, Champlain's interpreter, was in western New York in 1615, but was never on our river. French traders or *coureurs de bois*, had been there perhaps before, no doubt soon after, that date. Father Daillon was there in 1626. Father Breboeuf and Chaumonot were there, on their mission to the Neuters, in 1640. But all these sought either trade as individuals or the spread of the Gospel. In 1669, however, there came to this region a man primarily on a voyage of discovery, and, as a result, seeking control of the western Indian trade; but necessarily he sought the resultant control by France over the Indian tribes and their territory, and such control meant fort building. In company with deGasson and Gallinee, and their joint party, LaSalle in that year passed the mouth of the Niagara River, went as far west as the end of Lake Ontario; then, accompanied by a few men, turned back, ostensibly to return to Montreal, leaving the Fathers to proceed to and winter on the north shore of Lake Erie. Of LaSalle, during the next two years, we know little, only that he reached the Ohio in 1670, and made a trip on Lakes Erie, Huron and Michigan in 1671. My own belief is that he

and his small party went from the western end of Lake Ontario to the Niagara River, of whose importance as the 'great river of the Neuters' he had heard, and whose mouth he, no doubt, as he passed it shortly before, recognized as a desirable point for trade and as a base of supplies. At its mouth, I think, he spent the winter of 1669-1670. For here, according to the official report of deNonville (made in 1686), he built 'Logements' or quarters in 1668. This date is clearly an error, and should be 1669, for LaSalle was never in the Niagara region until 1669. The destruction of these 'quarters' of LaSalle's by the Senecas, in 1675, was given by deNonville as one of the main reasons for his expedition against them in 1678. In building quarters for himself and his party in an unknown and semi-hostile country, LaSalle doubtless made them defensible from attack. Hence, in 1669, on the site of Fort Niagara, LaSalle built the first white man's house on the frontier. It was a temporary fort and I include it in my list of forts, and name it Fort LaSalle. In 1670, deCourcelles, governor-general of Canada, is said to have recommended to his government the erection of a regular fort on the Niagara River. If so, he was probably instigated by suggestions made to him by LaSalle, after the latter returned to Quebec that year. In 1673, LaSalle himself was again in Quebec, and that year Frontenac, then governor-general, a personal friend of LaSalle, and without doubt at his request, recommended the erection of such a fort, and renewed the recommendation the following year. In 1678, LaSalle, finding that the French Government paid no attention to the project of a fort on the Niagara, arranged to build it as a private venture, in connection with his projected western explorations and for the building of forts where he thought necessary in connection therewith, for which he had obtained official consent in 'Letters Patent.' In December of that year, the advance party of his expedition, under command of LaMotte, in a brigantine of ten tons, entered the Niagara River; and some days later, near the site of Lewiston, they built a cabin, surrounded with palisades, which, though intended for a 'fort,' under the name of a 'magazine,' they felt compelled, in order to allay the suspicions of the Senecas, to call 'an Habitation'. For the purpose of giving a distinctive name to this structure, the first one on the river that is recorded as being 'palisaded,' or protected, I have assumed to call it Fort Hennepin,



ELIJAH BEING TAKEN TO HEAVEN IN A CHARIOT OF FIRE, FROM NIAGARA FALLS

One of the oldest and rarest prints, made about 1700 by S. C. Clere



VIEW OF TERRAPIN TOWER, MADE IN 1846
The walk was a favorite haunt of Francis Abbott, the Goat Island Hermit

after the priest and historian of the expedition, who helped to construct it. It seems, perhaps, incongruous to name a fort after a priest; but Hennepin was a very worldly Father, took a prominent part in furthering the commercial features of the expedition, and, by publishing the earliest detailed description and picture of Niagara Falls, has associated his name forever with this region, so it may be pardoned.

"In January, 1679, LaSalle obtained the consent of the Senecas to the erection of a storehouse at the mouth of the river, and a few days later, in the presence of Conti, Hennepin and LaMotte, he traced out on the high bank there, the outlines of the structure, to which he had two months earlier promised to give the name of 'Fort Conti.' It consisted of two blockhouses, forty feet square, built of logs, and connected by palisades. It stood on the point of land now embraced within the limits of the earthworks of Fort Niagara; but in the following August, through the carelessness of the sergeant in charge, this first pretentious defensive structure on the Niagara was reduced to ashes. It was the first distinctly so-called 'fort' built by white men west of Frontenac. To LaSalle must be given all the credit for the first 'fortifications' of this frontier. He first saw the needs and benefits of it, and through official channels had urged it upon the French government. When he could get no assistance in that direction, he accomplished it at his own expense. Seven years later, France recognized most decidedly the desirability of a fort at this point. In 1687 deNonville, after defeating the Senecas in the Genesee Valley, led his army to Niagara, where, in July of that year, on the site of the burned Fort Conti, he constructed a fort of 'pales with four bastions,' which he named himself, 'Fort de Nonville.' He left in it a garrison of one hundred men, with provisions for eight months. No sooner had his army started eastward than the Senecas who, though defeated, had not been subdued, besieged it, maintaining the siege all winter. In the spring its garrison, then reduced to a dozen men, was reinforced. On the erection of the fort, the British had promptly demanded its demolition, and the Senecas, at British instigation, refused to consider negotiations with France for a treaty of peace so long as it existed. So, in the summer of 1688, deNonville, under compulsion, gave orders for its destruction. The French excavated it, having first torn down the

pales, but leaving the buildings, seven in number, and a great cross, eighteen feet high, which stood on the parade ground, intact. The Senecas probably did not allow even these evidences of a hostile occupation of their territory to remain long.

"Baron La Hontan, who had helped to build this fort, and had then been ordered to the west, had a soldier's eye for strategic sites; for, as he saw the present site of Buffalo, he declared it to be a most desirable point for a fort, and on a map which he included in his subsequent book, he there marked 'Fort Suppose'; but no move was ever made by the French towards its erection.

"During the next thirty years no fort was erected on the Niagara, though both France and Britain were watching for an opportunity to build one, and the influence of the French over the Senecas was constantly increasing. In 1719, through the personality of Joncaire, a Frenchman by birth, but a Seneca by adoption, the man who spoke 'with all the good sense of a Frenchman, and with all the eloquence of an Iroquois,' France obtained the consent of the Senecas to the erection of a house on the Niagara. The Senecas had previously told Joncaire that he might build a house for himself wherever he chose; and he now selected a site on the eastern bank of the Niagara River at the foot of the trail or portage, and here he built the first 'trading house' in the western Indian country. The Senecas, true to their friendship for the French, but on the ground that Joncaire was a child of their nation, refused Britain's urgent demand for its demolition; they also refused her subsequent demand for permission to erect a similar 'trading house' on the river.

"Within a year Joncaire had enlarged his original 'cabin' into a 'blockhouse,' forty feet long by thirty feet wide, musket proof, with port holes and surrounded by palisades. He was its 'commander'; it was styled 'Magazine Royal,' and over it floated the flag bearing the Lilies of France. It became a great center of trade, its attendants were French soldiers, and in it France again had a real fort on the Niagara.

"In 1726, so well had Joncaire played his part, the French obtained the consent of the Iroquois to the erection of a stone house 'on the river,' and one hundred men were sent to build it. The engineer, Chassegross de Levy, saw the superior advantages of the site at the mouth of the river, seven miles away;

and, contrary to his official instructions, but very possibly in accordance with secret orders, built there (and not alongside of Joncaire's fort) a very large single structure, which is today the 'castle' at modern Fort Niagara. LaSalle's plan of fifty years before was now a reality, and on the site of Fort Conti was thus commenced a fort destined in a few years to become the most important fortification on the Lakes, and to play a most historic part in the history of the Iroquois, of the French, of their conquerors, the British, and of Britain's seceding and victorious colonies, the United States of America. The new structure was a large house, which later on became the residence of the French, and still later the residence of the British commandants, and was by them designated as 'The Castle,' a name it has retained ever since. It was a two-story structure, the oldest masonry on the frontier, or west of Albany. The British protested vigorously against the maintenance of this stone house, and used all their influence with the other five Iroquois nations (the Senecas, the sixth nation of the Confederacy, were the firm friends of the French) to have it torn down. But it was unavailing; the stone house, the first Fort Niagara, remained, and in French possession. Joncaire's house, at the foot of the portage, had served its purpose and served it well; now it was allowed to fall into decay.

"After it had been settled that France's ownership of this new house, or fort, was not to be disturbed, she proceeded to construct around it a real fort. Ramparts made of pickets, with four bastions, and enclosing about an acre of ground, were constructed around the buildings. This fortification, a fortress in every sense of the word, the second Fort Niagara, must have been finished about 1730; for by 1736 it mounted thirty guns. By 1739 the pickets of the ramparts had decayed and were falling down, necessitating repairs. The location and relative size of this second Fort Niagara is shown by Pouchot, on his map or plan of the greater fort, as it was when, under his command, it was besieged and captured by the British in 1759.

"French influence over the Senecas was now absolute and was in the ascendancy among the western tribes, where French forts multiplied. The fur trade between Detroit, then the great western metropolis for peltries, and Quebec, by way of Fort Niagara, was very large. So great was the value of the military stores and the merchandise of the traders going west, and of the

canoe loads of furs coming east, that it became necessary to erect some fortifications at the upper end of the portage, as a protection for this commerce. About 1745 a small fort or blockhouse, also a storehouse, was erected at this point, which is still called 'the Frenchmen's Landing,' and is situated just above the entrance of the hydraulic canal in the city of Niagara Falls. De Witt Clinton, who was at Niagara in 1810, noted the 'remains of stone buildings' at this spot. Local historians, of the succeeding generation, have also told of these remains, which were those of the first Little Niagara. But the current above was too swift and the rapids below were too near, to permit the Frenchmen's heavily-laden boats, which, with the increase of commerce, were gradually enlarged, to be handled with ease and safety at this point. So, in 1751, this upper end of the portage was moved about half a mile up stream, where was built a larger and more pretentious fort, called 'Fort du Portage,' or 'Fort Little Niagara'; this, the second Fort Little Niagara, being merely a dependency of the greater fort. It consisted of three good-sized blockhouses made of logs, and between them, as well as between the outer ones and the bank of the river, were strong palisades. Near it were barracks for the soldiers, cabins for the Frenchmen employed thereabouts, and huts for the Indians who carried the stores and peltries up or down the portage. At one end of the barracks was built the stone chimney, which is still standing, the only existing relic of what was in its day an important military post."

This structure, called Fort Schlosser chimney, although it was built ten years before Fort Schlosser, was erected in 1750. Except the old "castle" at Fort Niagara, which was finished in 1727, the chimney is the oldest piece of masonry west of Albany. The chimney originally stood west of the British Portage Road, but after The Niagara Falls Power Company purchased the lands along the river and factories began to be erected, it was moved one hundred feet eastward. During the summer of 1915, the Niagara Frontier Historical Society placed a tablet upon it inscribed as follows:

"Built by French, 1750, one hundred feet westward in Fort Little Niagara's barracks, which they burned in 1759. To it British built in 1761 the Stedman House (where that master of the portage lived until United States occupation in 1759) which, in 1808, became Broughton's tavern. Burned by British in devas-



THE CAVERN OF THE HORSESHOE FALLS, ON THE CANADIAN SIDE OF
THE RIVER. MADE IN 1844



A VIEW WHEN THEY CALLED IT CHUTE DU NIAGARA

tation of 1813. Re-erected here in 1898 by Niagara Falls Power Company. Marked by the Niagara Frontier Historical Society in 1915."

At the formal ceremonies dedicating this tablet, Hon. Peter A. Porter, once owner of the land upon which the chimney stands, Frederick L. Lovelace, secretary of The Niagara Falls Power Company, which company now owns it, and Edward T. Williams, president of the Niagara Frontier Historical Society, spoke, and Mrs. Linda deK. Fulton, member of a pioneer family, read a poem.

Mr. Porter continues:

"That fort stood until 1759, when its commandant, Joncaire (a son of that Joncaire previously mentioned), acting under orders from Fort Niagara, burned it, removed all its transportable goods to a location on Chippewa Creek, and took its garrison of sixty men to aid in the defense of the greater fort, which was being besieged by the British. This second Fort Little Niagara had been kept in a fair condition, for after its erection the French felt more secure in their supremacy on this frontier. At the same time, for the further protection of the portage and of its increasing business, they built and garrisoned fortified warehouses or small forts both at the top and at the foot of Lewiston Mountain, the former close to the portage roadway where it reached the crest of the mountain, the latter at its terminal on the river bank below, which was the head of the lower Niagara River's navigation. A year or so later they built two more warehouses alongside of the one at the foot of the mountain. This fort stood on the river bank, some thirty feet above the river. The portage terminated at the water's edge below it, descending thereto through a gully which still exists.

"In 1754, Britain's aggressiveness and plans for war in the New World, caused France to make preparations for the inevitable coming struggle for control of North America. Fort Niagara, the one fort in the West that Britain specially coveted, was in a dilapidated state, in no condition to resist an attack by a large force. In 1755, France decided to greatly strengthen it, in fact, to entirely rebuild it; and that fall, Pouchot, an experienced engineer, was sent there for that purpose. During the next three years, Pouchot was at Fort Niagara nearly half the time; at first as an engineer, later as its commandant. He made it a fort of

enormous strength; built extensive new fortifications, extending from the lake to the river, thus increasing the enclosed area of the fort fully eight-fold, and built new barracks to accommodate the enlarged garrison. The work commenced on January 14, 1756, appears to have been carried on uninterruptedly, and was not completed until October 12, 1757. All the earthworks on the land side, on the lines of the present ones, were constructed at this time. The palisades of the 'old' or second Fort Niagara, were evidently removed on the completion of this new, or third Fort Niagara; but the buildings of the old fort (and it would seem that there were a number of them) so far as they were useful, were retained. In the spring of 1759 the fortifications were extensively repaired under Pouchot's supervision, and when a month after their satisfactory completion, the British besieged it, Fort Niagara was the most important fort in the West. There were then inside of the walls twenty buildings, at least four of them solid stone structures. It had accommodations for one thousand men; its fortifications embraced some eight acres; its land side was heavily fortified; its lake and river sides being further protected by the steep banks. Its earthwork fortifications and four stone buildings, the former several times repaired, are today substantially as they were then.

"The story of the siege and capture of Fort Niagara need not be told here, but its surrender to the British in July, 1759, put an end forever to French control along this frontier.

"During the time both of her earlier influence and of her subsequent control over this region, which jointly extended over a period of ninety years, France had built twelve forts on the Niagara River, all on its eastern bank. Of these, one (Conti) had been accidentally burned; one (deNonville) had been compulsorily abandoned; one (second Little Niagara) had been intentionally destroyed; four (LaSalle, Hennepin, first Little Niagara and Joncaire's) had been allowed to decay; two (first and second Fort Niagara) were now included in the third and greater fort of that name; while three (third Niagara, one at the foot and one at the top of the mountain) passed into the hands of the victorious British."

In another part of his pamphlet Mr. Porter says, with particular reference to the exact area of the Niagara frontier and its importance then and importance now:

"It is doubtful if there is elsewhere in North America an area of equal size, whose history better exhibits, first the explorations and later the contentions among the nations during the seventeenth and eighteenth centuries for the control of territory and trade, than the strip of land which embraces the banks of the Niagara River, the connecting link, thirty-six miles long, between Lake Erie and Lake Ontario. For Niagara was the key to all the West; its portage of seven miles around the Falls being the only break in an all-water journey between Fort Frontenac and the far ends of all the upper lakes. Spain, Holland, Sweden, France and Britain all coveted and all secured a foothold on this continent. The tenures of Holland and Sweden were of comparatively short duration. Spain, with longer occupancy and larger possessions (her territory lying to the south) made but little progress in the settlement of the country. France settled the northern and Britain the central Atlantic coast. Both gradually but surely increased their areas, extending their control westward, until, in their inevitable contest for supremacy, France was entirely dispossessed. These two were the only European nations that ever secured any foothold whatever on the Niagara.

"The territory, known in history as the 'Niagara Frontier,' received its commonly accepted geographical boundaries at the hands of Sir William Johnson, who, so far as dealing with the various Indian tribes, was the most influential white man who ever trod this continent. At the great treaty held by him, in behalf of Great Britain, at Fort Niagara in 1764, there were present representatives of many Indian tribes from the east, west, north and south; from the Hudson and from the Mississippi; from near the frozen regions of Hudson's Bay, and from the sunny lands of the Arkansas. A British army (under command of General Bradstreet) then on its western journey, lay encamped at the fort. With such an argument, and with their recent hostilities to the British fresh in their minds, 'the Chenuseo Indians and other enemy Senecas' were in no position to refuse Sir William's request for a large grant of land. Only three months before, in expiation of the 'Devil's Hole Massacre,' they had agreed (though it is doubtful if they ever intended to fulfill the agreement) to grant to Great Britain the lands along both banks of the Niagara River, from a point some two miles above

the Falls to Lake Ontario. The grant was to be signed at a Treaty Conference to be held at Fort Niagara during the coming summer. When it assembled, the non-attendance of the Senecas caused Sir William to send and demand their immediate appearance, under threat of annihilation. They came at once, and when they arrived he calmly requested them to enlarge their promised grant so as to include both sides of the river from the Falls to Lake Erie, of the width of two miles on each bank, and to formally complete the transaction at once. So the Senecas promptly 'surrendered to his Majesty for his sole use and that of the garrison,' the territory four miles wide, that is, two miles back from the river on each bank, along both sides of the Niagara River from its source to its mouth. The Senecas also now presented all the islands in that river to Sir William, who immediately transferred them to the Crown.

"He wanted Great Britain to have a record title to all this territory from lake to lake. At its northern end was situated the famous Fort Niagara, the key to the entrance to the western country. Near its center was that indispensable portage around the Cataracts. Along the seven miles of that portage and for its proper protection, the army had just completed eleven blockhouses, and had also built a blockhouse at the brow of the mountain; while for the defense respectively of its upper and lower terminals, it had built, but three years before, Fort Schlosser and a new fort just below the mountain. The Niagara portage in the fall of 1764 was the best protected highway in all America.

"At the source of the river, without even the formality of asking the permission of the Senecas who owned the soil, a depot of supplies (the first Fort Erie) had just been built by the British army, and was now 'defensible,' though not fully completed. That he might have a legal title to this territory, where he had just built so many forts, and the specific legal, as well as martial right to maintain them, was the white man's reason for demanding that the red man publicly deed away the Niagara Frontier, and for compelling him to do so."

With reference to the building of the first Fort Niagara and the beginning of the struggle between the French and the English for the control of the Niagara Frontier, it is necessary to consider the administration of Marquis deNonville as Governor of New France and his expedition against the Senecas. History tells

us that the tribes betrayed by LaBarre's treaty could no longer be depended upon for beavers unless something were done to protect them, and procure their respect, as well as that of the Iroquois. DeNonville therefore made it his chief concern to chastise the Senecas, who were foremost in hostility to the French. For that purpose, in the summer of 1687, he assembled nearly three thousand French and Indians, including Algonquins, who had come via Niagara from a thousand miles up the lakes, at Irondequoit Bay, now in Monroe County. To give an idea of deNonville's operations, we find in Paris Document No. 3 an extract from the King's instructions to the Marquis deNonville under date of March 10, 1685, as follows:

"His principal object ought to be to establish the repose of the Colony by a firm and solid peace. But to render this peace durable he must lower the pride of the Iroquois, support the Illinois and the other allies whom Sir de la Barre has abandoned, and by a firm and vigorous policy to let the said Iroquois know that they will have everything to fear if they do not submit to the conditions which he intends to impose on them.

"He will, then, first declare to them that he shall protect with all his power the allies of the French; inform the Illinois, the Ontaouacs, Miamis and others of the same thing, and should he deem it proper to back this declaration by troops and an expedition against the Senecas, His Majesty leaves it to him to adopt, in his regard, such resolutions as he shall deem most suitable, being well persuaded that he will follow the best course, and that his experience in war will place him in a position to bring that to a speedy conclusion if he be obliged to undertake it.

"He ought to be informed that the Commandant of New York has pretended to aid the Iroquois and to extend the English domination even to the bank of the River St. Lawrence and over the whole extent of Country inhabited by those Savages. And though His Majesty doubts not but the King of England to whom he has made representations by his Ambassador, will give orders to his Commandant to put a stop to these unjust pretensions, he, notwithstanding, considers it necessary to explain to him that he ought to do everything to maintain good understanding between the French and English. Yet should the latter, contrary to every appearance, rouse the Savages and afford them succor, he must act towards them as towards enemies,

when he finds them in the Indian Country, without, however, attempting anything in the countries under the King of England's obedience."

From a memoir concerning the present state of Canada and the measures that may be adopted for the security of the country under date of November 12th, 1685, the following extract is taken:

"It appears to me extremely important that the King render himself absolute master of this Lake, which is more than three hundred leagues in circumference. I am persuaded that the English would like particularly to have a post there, which would be immensely prejudicial to the Colony and the King's power on this Continent; his Majesty could easily make himself master of it, without any opposition, by the permanent establishment of a post, with vessels on this Lake, and by another fort and vessels on Lake Erie, which is only two leagues distant, by the Niagara River, from this Lake Ontario; but as this post cannot be established until after the Iroquois are conquered, I shall, before entering into a detail of the means of conquering that Nation, again say, regarding the importance of occupying those posts, that the English have so great a facility to establish themselves there that it is the power of the Iroquois alone which has prevented them having posts here, since Lake Ontario can easily be reached on horseback from Manatte and Orange, there being a distance of only one hundred leagues through a fine country."

Under date of May 8th, 1686, we find from the Paris Documents that Marquis de Nonville wrote to the Minister as follows:

"I learn that the news which I had the honour to send you of the appearance on Lakes Ontario and Erie of English Canoes accompanied by French Deserters on their way to the Outaouacs is true. There are ten of them loaded with merchandise. Thereupon, my Lord, I sent orders to Missilimakina, to Catarokouy and other places where we had Frenchmen, to run and seize them, and I am resolved to send another officer with twelve reliable men to join *Sieur D'Orvilliers* at Catarosky, who is to go with *Sieur de LaSalle's* bark to Niagara to treat there with the Iroquois Indians on their return from hunting. He will take some men with him. This officer, with the aid of this bark and some canoes which shall be furnished him, will post himself

with twenty good men at the River, communicating from the Lake Erie with that of Ontario, near Niagara, by which place the English who ascended Lake Erie must of necessity pass on their return home with their peltries. I regard, my Lord, as of primary importance, the prohibition of this trade to the English, who, without doubt, would entirely ruin ours both by the cheaper bargains they could give the Indians and by attracting to them the Frenchmen of our Colony who are accustomed to go into the woods.

"I am persuaded that the Iroquois are very anxious for peace now that they see troops, but I do not at all believe that they will submit not to make war any more against the other Nations our allies, therefore there is no doubt but we must prepare to humble them.

"What I should consider most effectual to accomplish this would be the establishment of a right good post at Niagara.

"The manner in which the English have managed with the Iroquois hitherto, when desirous to establish themselves in their neighborhood, has been to make them presents for the purchase of the soil and the property of the land they wish to occupy. What I see most certain is, whether we act so by them or have peace or war with them, they will submit with considerable impatience to see a fort built at Niagara which would secure to us the communication between the two lakes; would render us masters of the road the Senecas take in going to hunt for furs, none of which they have on their own ground; it is likewise their rendezvous when hunting for their supplies of meat with which, as well as with all sorts of fish, this country abounds.

"This post would be of great advantage to the other nations who are at war with these, and who durst not approach them, having too long a road to travel when retreating. It would keep them in check and in obedience, especially by building a Fort sufficiently large to contain a force of four hundred or five hundred men to make war on them; this cannot be done without expense because it must be enclosed by a simple, ordinary picket fence to place it beyond all insult, not being in a position to be relieved by us.

"To guarantee its construction, it must not be doubted for a moment, though at peace with them, but a guard would be necessary there for the security of the workmen. The freight of

provisions as well as for the garrison as the troops to be stationed there is very high, since a thousand pounds weight which is a load for a canoe, costs 110 liv. from Ville Marie on the Island of Montreal to Catarakouy. Independent of mere provisions, how many other necessaries and munitions are required!

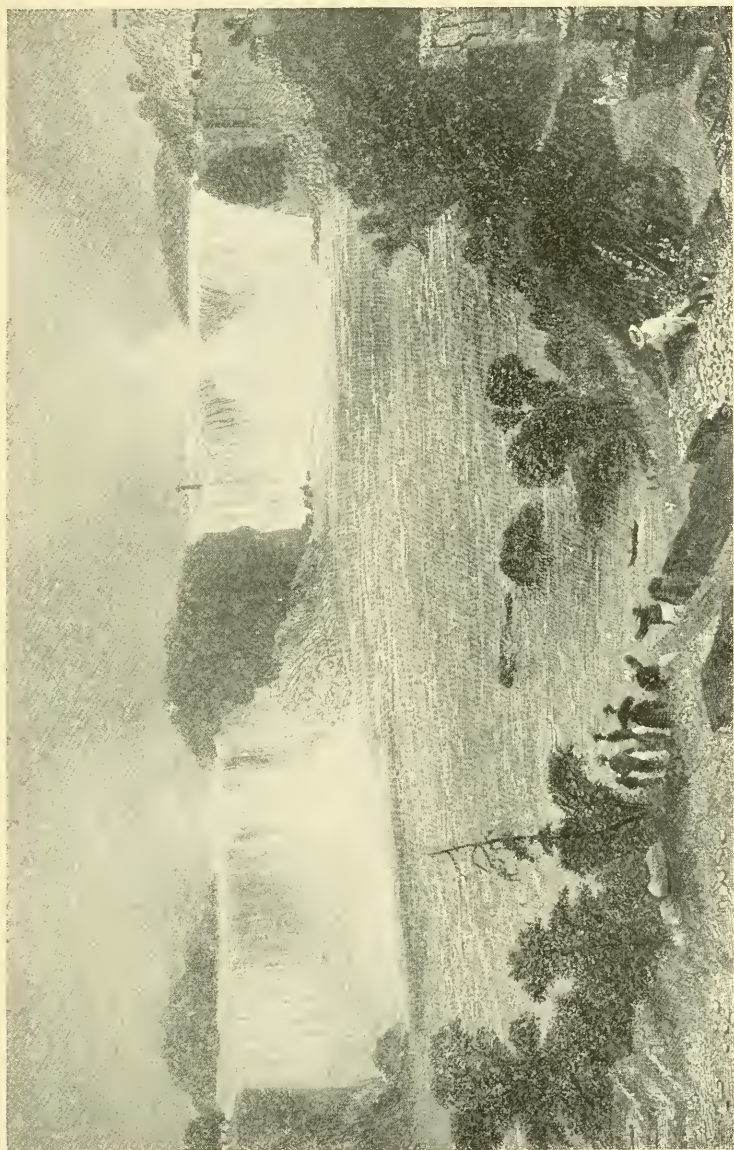
"This post, my Lord, would absolutely close the entire road to the Outaouacs against the English, and would enable us to prevent the Iroquois carrying their peltries to the latter; for with the redoubt at Catarokouy which would serve us as an Entrepot to shelter our barks from the storms in winter, we having posts at both sides of the Lake could render ourselves Masters of the Hunting of that Nation who can support itself merely by that means and would draw but little from the English if it had no more peltries to give them. What is very certain, they would carry them much fewer than heretofore.

"I propose to send *Sieur d'Orvilliers* to Niagara this year with *Sieur de Villeneuve*, the draughtsman whom you gave me, to draw the plans, and after I shall have seen the Iroquois at Ville Marie on the Island of Montreal and we shall know what we have to expect from them, I'll see if I shall not be able to take a trip thither myself, in order to furnish you with a more certain report thereon; for to rely on *Sieur de Villeneuve* alone, he is a very good, very accurate, very faithful draughtsman, but in other respects he has not a very well ordered mind; it is too confined to be able to furnish out of his own head any ideas for the establishment of a post and its management.

"I am assured that the land in the neighborhood is very fine and fertile, easy of cultivation; it is situate about the forty-fourth degree. Everything I learn confirms me in the opinion which I entertain, that this post would, in three years at farthest, support itself. It is to be feared that fortifying it would draw war on us, if you wish to avoid it; but at the same time I believe that were the Senecas to see us well planted there, they would be more pliant.

"Should this plan be agreeable to you, my Lord, please send masons and plenty of instruments to break up the ground and convey the stone.

"You will be surprised, my Lord, to learn that *Sieur de Chailly* of whom I had the honor to write you this fall, not being able to have his conge from me to retire to France with all his



EARLY VIEW ABOVE THE MAID OF THE MIST LANDING ON THE CANADIAN SIDE OF THE RIVER



NIAGARA FALLS, FROM HENNERIN VIEW

property which he sent off last year, before my arrival, has fled and deserted the Country, to pass over the Orange (Albany) and thence without doubt by way of England to France.

“What is disagreeable in it is, that he will have informed Governor Dongan of everything he knows of our expeditions to the Baie du Nord (Hudson’s Bay), and has learned of the interests of the country and our designs. I beg of you, my Lord, to permit the confiscation of whatever property may be found belonging to him for the benefit of the two hospitals of the Colony.”

Governor Dongan replied to the above letter from Albany under date of May 22d, 1686, as follows:

“*Sir*—I have sent for the five Nations of Indians yt belongs to this Government to meet me at this place, to give them in charge that they should not goe to your side of the Great Lakes nor disturbe your Indians and Traders, but since my coming here I am informed that our Indians are apprehensive of warr by your putting stores into Cataract (Cataraqui) and ordering some forces to meet there. I know you are a man of judgment and that you will not attack the King of England’s subjects. Being informed that those Indians with whom our Indians are engaged in warr, with, are to the West and Southwest of the greate Lakes (if so) in reason you can have no pretence to them. It is my intention that our Indians shall not warr with the farr Indians. Whether they doe or not it does not seem reasonable that you should engage yourself in the quarrell of Indians wee pretend too, against our own Indians. Whether these Territories belong to our or the French King is not to be decided here, but by our Masters at home; and your business & mine is to take Mapps of the Country so well as wee can and to send them home for the limits to be adjusted there.

“I am likewise informed that you are intended to build a fort at a place called Ohniagero on this side of the Lake within my Masters territories without question (I cannot believe it) that a person that has your reputation in the world would follow the steps of Monsr. Labarre and be ill advised by some interested persons in your Government to make disturbance between our Masters subjects in these parts of the world for a little pillitree; when all these differences may be ended by an amicable correspondence between us. If there be anything amiss, I doe assure

you it shall not be my fault though we have suffered much, and doe dayly by your people's trading within the King of England's territoryes. I have had two letters from the two Fathers that lives amongst our Indians, and I find them somewhat disturbed with an apprehension of war, which is groundlesse, being resolved that it shall not begin here, and I hope your prudent conduct will prevent it there, and referr all differences home as I shall doe. I heare one of the Fathers is gone to you, and the other that staid I have sent for him here lest the Indians should insult over him, tho' its a thousand pittys that those that have made such progresse in the service of God should be disturbed, and that by the fault of those that laid the foundation of Christianity amongst these barbarous people.

"Setting apart the station I am in I am as much Monsr. Desnonville's humble servant as any friend he has, and will omitt noe opportunity of manifesting the same Sr, Your humble Servt, Thos. Dongan."

It would appear from the Marquis deNonville's letters to Governor Dongan that the French were not endeavoring to grasp control of the Frontier or to fortify the mouth of the river. But that was exactly what they were trying to do. What deNonville and his men actually did do will appear from the following extract from his diary:

"26th (July). We set out for Niagara, resolved to occupy that post as a retreat for all our Indian allies, and thus afford them means of continuing, in small detachments, the war against the enemy whom they have not been able to harass hitherto, being too distant from them, and having no place to retire to. Although it is only thirty leagues from Ganniatarontagouat (Irondequoit) to Niagara, we were unable to accomplish the distance in less than four days and a half by reason of contrary winds; that is to say, we arrived there on the morning of the 30th. We immediately set about selecting a site, and collecting stockades for the construction of the fort which I had resolved to build on the Iroquois side at the point of a tongue of land between the Niagara River and Lake Ontario.

"31st of July & 1st of August. We continued this work, which was the more difficult as there was no wood on the ground suitable for making palisades, and from its being necessary to haul them up the hill. We performed this labor so diligently

that the fort was in a state of defense on the last-mentioned day. . . . ”

“2d of August. The Militia having performed their allotted task, and the fort being in a condition of defense, in case of attack, they set out at noon for the end of the lake, on their return home.

“3d. The next day I embarked in the morning for the purpose of joining the militia, leaving the regular troops in charge of M. deVaudreuil, to finish what was the most essential, and to render the fort not only capable of defense, but also of being occupied by a detachment of a hundred soldiers, which are to winter there under the command of M. de Troves, a veteran officer.”

A little later the Marquis wrote to the minister, Seignelay:

“The post I have fortified at Niagara is not a novelty, since Sieur de LaSalle had a house there, which is in ruins since a year, when serjeant La Fleur, whom I placed at Cataracouy, abandoned it through the intrigues of the English, who solicited the Senecas to expel him by threats. My Lord, if you do not wish to lose the entire trade of the upper country, we must maintain that post; also that of Dulhu, at the Detroit, and the possession of all the lakes.”

From Paris Document No. 4 is taken a description of the condition in which Fort Niagara was left in 1688:

“On the 15th day of September, of the year one thousand, six hundred and eighty and eight, in the forenoon Sieur Desbergeres, Captain of one of the companies of the detachment of the marine, Commandant of Fort Niagara, having assembled all the officers, the Reverend Father Millet, of the Society of Jesus, Missionary, and others, to communicate to them the orders he received from the Marquis deNonville, Governor and Lieutenant General for the King in the whole extent of New France and Country of Canada, dated the sixth day of July, of the present year, wherein he is ordered to demolish the fortification of the said fort, with the exception of the cabins and quarters, which will be found standing (*en nature*); we, Chevalier de La Mottat, Lieutenant of a detached company of the marine, and Major of said fort, have made a progress verbal, by order of said Commandant, containing a memorandum of the condition in which we leave said quarters which will remain entire, to maintain the possession, his Majesty and the French have for a long time had in this Niagara District: Firstly, we leave in the center

of the square a large, framed, wooden cross, 18 feet in height, on the arms of which are inscribed in large letters, these words:

REGN. VINC. IMP. CHR.

which was erected on last Good Friday by all the officers and solemnly blessed by the Reverend Father Millet.

“ITEM, A cabin in which the Commandant lodged, containing a good chimney, a door and two windows furnished with their hinges, fastenings and locks, which cabin is covered with forty-four deal boards, and about six other boards arranged inside into a sort of bedstead.

“ITEM. In the immediate vicinity of said cabin is another cabin with two rooms having each its chimney; ceiled with boards, and in each a little window and three bedsteads, the door furnished with its hinges and fastenings; the said cabin is covered with fifty deal boards and there are sixty like boards on each side.

“ITEM, Right in front is the Rev. Father Millett’s cabin furnished with its chimney, windows and sashes; with shelves, a bedstead and four boards arranged inside, with the door furnished with its fastenings and hinges, the which is of twenty-four boards.

“ITEM, Another cabin opposite the cross, in which there is a chimney, board ceiling, three bedsteads, covered with forty-two boards, with three like boards on one side of said cabin, there is a window with its sash and a door furnished with its hinges and fastenings.

“ITEM, Another cabin with a chimney, a small window with a sash and a door; covered with thirty deal boards; there are three bedsteads inside.

“ITEM, A bakehouse furnished with its oven and chimney partly covered with boards and the remainder with hurdles and clay; also an apartment at the end of said bakery containing two chimneys; there are in said bakery a window and door furnished with its hinges and fastenings.

“ITEM, Another large and extensive frame building having a double door with nails, hinges and fastenings, with three small windows; the said apartment is without a chimney; ’tis floored with twelve plank (Madriers) and about twelve boards are arranged inside; without, ’tis clapboarded with eighty-two plank.



INDIAN LADDER ON AMERICAN SIDE OF RIVER

A view made in 1839



TOP OF INDIAN LADDER, ON CANADIAN SIDE OF RIVER

ITEM, A large storehouse covered with one hundred and thirty boards, surrounded by pillars eight feet high, in which there are many pieces of wood serving as small joists, and partly floored with several unequal plank. There is a window and a sliding sash.

“ITEM, above the scarp of the ditch a well with its cover.

“All which apartments are in the same condition in which they were last winter, and consequently inhabitable. Which all witnesses, namely, the Rev. Father Millet of the Society of Jesus, Missionary; Sieur Desbergeres, Captain and Commandant; Sieurs de la Mottat, La Rabelle, DeMuratre, deClerin & Sieurs de Gembraix, Chevalier, deTregay, all lieutenants and officers, and Maheut, Pilot of the Bark the General, now in the roadstead, certified to have seen and visited all the said apartment, and have therefore signed the minute and original of these presence.”

CHAPTER III

FIRST ACCOUNT OF THE FALLS IN ENGLISH

Text of a Letter Written by Peter Kalm, a Gentleman of Sweden,
During His Travels in America, to a Friend in Philadelphia

ONE of the most interesting pieces of literature pertaining to the Niagara Frontier is the earliest account of Niagara Falls written in English, which is in the form of a letter written by Peter Kalm, a gentleman of Sweden, during his travels in America, to a friend in Philadelphia. The letter is reproduced, with its quaint phrasing, verbatim:

“Albany, September 2, 1750.

“*Sir*—After a pretty long journey made in a short time, I am come back to this town. You may remember, that when I took my leave of you, I told you, I would this summer, if time permitted, take a view of Niagara Falls, esteemed one of the greatest curiosities in the World. When I came last year from Quebec, you enquir’d of me several particulars concerning this Fall; and I told you what I heard of it in Canada, from several French gentlemen who had been there; but this was still all hearsay; I could not assure you of the truth of it, because I had not then seen it myself, and so it could not satisfy my own, much less your curiosity. Now, since I have been on the spot, it is in my power to give you a more perfect and satisfactory description of it.

“After a fatiguing travel, first on horseback thro’ the country of the Six Indian Nations, to Oswego, and from thence in a Canoe upon Lake Ontario, I came on the 12th of August in the evening to Niagara Fort. The French there seemed much

perplexed at my first coming, imagining I was an English officer, who under pretext of seeing Niagara Falls, came with some other view; but as soon as I shew'd them my passports, they changed their behaviour, and received me with the greatest civility. Niagara Falls is six French leagues from Niagara Fort. You first go three leagues by water up Niagara River, and then three leagues over the carrying place. As it was late when I arriv'd at the Fort, I could not the same day go to the Fall, but I prepar'd myself to do it the next morning. The commandant of the Fort, Monsr. Beaujon, invited all the officers and gentlemen there to supper with him. I had read formerly almost all the authors that have wrote anything about this Fall; and the last year in Canada, had made so many enquiries about it, that I thought I had a pretty good idea of it, and now at supper requested the gentlemen to tell me all they knew and thought worth notice relating to it, which they accordingly did. I observed that in many things they all agreed, in some things they were of different opinions, of all which I took particular notice. When they had told me all they knew, I made several queries to them concerning what I had read and heard of it, whether such and such a thing was true or not and had their answers on every circumstance. But as I have found by experience in my other travels, that very few observe Nature's works with accuracy, or report the truth precisely, I cannot now be entirely satisfied without seeing with my own eyes whenever 'tis in my power. Accordingly the next morning, being the 13th of August, at break of day, I set out for the Fall. The commandant had given orders to two of the Officers of the Fort to go with me and show me everything, and also sent by them an order to Mons. Jonqueire, who had liv'd ten years by the carrying-place, and knew everything worth notice of the Fall, better than any other person, to go with me, and show and tell me whatever he knew. A little before we came to the carrying-place, the water of the Niagara River grew so rapid that four men in a light birch canoe had much difficulty to get up thither. Canoes can go half a league above the beginning of the carrying-place, tho' they must work against a water extremely rapid; but higher up it is quite impossible, the whole course of the water for two leagues and a half up to the great Fall being a series of smaller Falls, one under another, in which the greatest Canoe

or Battoe would in a moment be turn'd upside down. We went ashore, therefore, and walk'd over the carrying-place, having besides the high and steep side of the river two great hills to ascend, one above the other. Here on the carrying-place I saw above two hundred Indians, most of them belonging to the Six Nations, busy in carrying packs of furs, chiefly of deer and bear, over the carrying-place. You would be surpriz'd to see what abundance of these things are brought every day over this place. An Indian gets twenty pence for every pack he carries over, the distance being three leagues. Half an hour past 10 in the morning we came to the great Fall, which I found as follows: To the river (or rather strait) runs here from S. S. E. to N. N. W. and the rocks of the great Fall cross it, not in a right line; but forming almost the figure of a semicircle or horseshoe.

"Above the Fall, in the middle of the river is an island, lying also S. S. E. and N. N. W. or parallel with the sides of the river; its length is about seven or eight French arpents (an arpent being 180 feet). The lower end of this Island is just at the perpendicular edge of the Fall. On both sides of this island runs all the water that comes from the lakes of Canada, viz: Lake Superior, Lake Michigan, Lake Huron, and Lake Erie, which you know are rather small seas than lakes, and have besides a great many large rivers that empty their water in them, of which the greatest part come down this Niagara Fall. Before the water comes to this island, it runs but slowly, compared with its motion when it approaches the island, where it grows the most rapid water in the World, running with a surprising swiftness before it comes to the Fall; it is quite white, and in many places is thrown high up into the air! The greatest and strongest battoes would here in a moment be turned over and over. The water that goes down on the west side of the island is more rapid, in greater abundance, whiter, and seems almost to outdo an arrow in swiftness. When you are at the Fall, and look up the river, you may see that the river above the Fall is everywhere exceeding steep, almost as the side of a hill. When all this water comes to the very Fall, there it throws itself down perpendicular! It is beyond all belief the surprise when you see this! I cannot with words express how amazing it is! You cannot see it without being quite terrified; to behold so vast a quantity of water falling from a surprising height! I doubt not but you have a

desire to learn the exact height of this great Fall. Father Hennepin supposes it 600 Feet perpendicular; but he has gained little credit in Canada; the name of honour they give him there, is un grand Menteur, or The great Liar; he writes of what he saw in places where he never was. 'Tis true he saw this Fall; but as it is the way of some travellers to magnify everything, so has he done with regard to the Fall of Niagara. This humour of travellers, has occasioned me many disappointments in my travels, having seldom been so happy as to find the wonderful things that had been related by others. For my part, who am not fond of the Marvellous, I like to see things just as they are, and so to relate them. Since Father Hennepin's time, this Fall, by all accounts that have been given of it, has grown less and less; and those who have measured it with mathematical instruments find the perpendicular fall of the water to be exactly 137 feet. Monsr. Morandrier, the king's engineer in Canada, assured me, and gave it me also under his hand, that 137 feet was precisely the height of it; and all the French Gentlemen that were present with me at the Fall, did agree with him, without the least contradiction. It is true those who have tried to measure it with a line find it sometimes 140, sometimes 150 feet, and sometimes more; but the reason is, it cannot that way be measured with any certainty, the water carrying away the Line. When the water is come down to the bottom of the rock of the Fall, it jumps back to a very great length in the air; in other places it is white as milk or snow; and all in motion like a boiling chaldron. You may remember to what a great distance Hennepin says the noise of this great Fall may be heard. All the gentlemen who were with me agreed that the farthest one can hear it is fifteen leagues, and that very seldom. When the air is quite calm, you can hear it to Niagara Fort; but seldom at other times, because when the wind blows, the waves of Lake Ontario make too much noise there against the Shore. They informed me that when they hear at the Fort the noise of the Fall, louder than ordinary, they are sure a North East Wind will follow, which never fails; this seems wonderful, as the Fall is South West from the Fort, and one would imagine it to be rather a sign of a contrary wind. Sometimes, 'tis said, the Fall makes a much greater noise than at other times; and this is looked upon as a certain mark of approaching bad weather, or rain; the Indians here hold it

always for a sure sign. When I was there it did not make an extraordinary great noise; just by the Fall we could easily hear what each other said, without speaking much louder than common when conversing in other places. I do not know how others have found so great a noise here, perhaps it was at certain times, as above-mentioned. From the Place where the water falls, there rise abundance of vapours, like the greatest and thickest smoak, sometimes more, sometimes less; these vapours rise high in the air when it is calm, but are dispersed by the wind when it blows hard. If you go nigh to this vapour or fog, or if the wind blows it on you, it is so penetrating that in a few minutes you will be as wet as if you had been under water. I got two young Frenchmen to go down, to bring me from the side of the Fall at the bottom, some of each of the several kinds of herbs, stones and shells they should find there; they returned in a few minutes, and I really thought they had fallen into the water; they were obliged to strip themselves quite naked, and hang their clothes in the sun to dry. When you are on the other East side of the Lake Ontario, a great many leagues from the Fall, you may, every clear and calm morning, see the vapours of the Fall rising in the air; you would think all the woods thereabouts were set on fire by the Indians, so great is the apparent smoak. In the same manner you may see it on the West side of the Lake Erie, a great many leagues off.

“Several of the French gentlemen told me that when birds come flying into this fog or smoak of the Fall, they fall down and perish in the Water; either because their wings are become wet, or that the noise of the Fall astonishes them, and they know not where to go in the Dark; but others were of opinion that seldom or never any bird perishes there in that manner; because, as they all agreed, among the abundance of birds found dead below the fall, there are no other sorts than such as live and swim frequently in the water; as swans, geese, ducks, water-hens, teal, and the like. And very often great flocks of them are seen going to destruction in this manner: they swim in the river above the Fall, and so are carried down lower and lower by the water, and as water-fowl commonly take great delight in being carried with the stream, so here they indulge themselves in enjoying this pleasure so long, till the swiftness of the water becomes so great that 'tis no longer possible for them to rise, but they are driven

down the precipice, and perish. They are observed when they draw nigh to the Fall, to endeavor with all their might to take wing and leave the water, but they cannot. In the months of September and October, such abundant quantities of dead water fowl are found every morning below the Fall, on the shore, that the garrison of the fort for a long time live chiefly upon them; besides the fowl they find also several sorts of dead fish, also deer, bears, and other larger animals are generally found broken to pieces. Just below the fall of the water is not rapid, but goes all in circles, and whiter, like a boiling pot; which, however, doth not hinder the Indians going upon it in small canoes a fishing; but a little lower begins the smaller fall. When you are above the Fall, and look down, your head begins to turn; the French who have been here a hundred times will seldom venture to look down, without at the same time keeping fast hold of some tree with one hand.

“It was formerly thought impossible for anybody living to come at the island that is in the middle of the Fall; but an accident that happened twelve years ago, or thereabouts, made it appear otherwise; the history is this. Two Indians of the Six Nations went out from Niagara Fort, to hunt upon an island that is in the middle of the river, or strait, above the great Fall, on which there used to be abundance of deer. They took some French brandy with them, from the fort, which they tasted several times as they were going over the carrying place; and when they were in the canoe, they took now and then a dram, and so went along up the strait towards the island where they proposed to hunt; but growing sleepy, they laid themselves down in the canoe, which, getting loose, drove back with the stream, farther and farther down till it came nigh that island that is in the middle of the Fall. Here one of them, awakened by the noise of the Fall, cries out to the other that they were gone, yet they tried if possible to save life. This island was nighest, and with much working they got on shore there. At first they were glad; but when they had considered everything, they thought themselves hardly in a better state than if they had gone down the Fall, since they had now no other choice, than either to throw themselves down the same, or to perish with hunger. But hard necessity put them on invention. At the lower end of the island the rock is perpendicular, and no water is running there. This

island has plenty of wood; they went to work directly and made a ladder of shrouds of the bark of linden tree (which is very tough and strong), so long 'till they could with it reach the water below; one end of this bark ladder they tied fast to a great tree that grew at the side of the rock above the Fall, and let the other end down to the water. So they went down along their new-invented stairs, and when they came to the bottom in the middle of the Fall, they rested a little; and as the water next below the Fall is not rapid, as before mentioned, they threw themselves into it, thinking to swim on shore. I have said before that one part of the Fall is on one side of the island, the other on the other side. Hence it is, that the waters of the two cataracts running against each other, turn back against the rock that is just under the island. Therefore, hardly had the Indians began to swim before the waves of the eddy threw them with violence against the rock from whence they came. They tried it several times, but at last grew brus'd and the skin of their bodies torn in many places. So they were obliged to climb up their stairs again to the island, not knowing what to do. After some time they perceived Indians on the shore, to whom they cried out. These saw and pity'd them, but gave them little hopes of help; yet they made haste down to the fort, and told the commander where two of their brethren were. He persuaded them to try all possible means of relieving the two poor Indians; and it was done in this manner. The water that runs on the east side of this island is shallow, especially a little above the island towards the eastern shore. The commandant caused poles to be made and pointed with iron; two Indians determined to walk to this island by the help of these poles, to save the other poor creatures, or perish themselves. They took leave of all their friends as if they were going to death. Each had two such poles in his hands, to set against the bottom of the stream, to keep them steady. So they went and got to the island, and having given poles to the two poor Indians there, they all returned safely to the main. Those two Indians who in the above mentioned manner were first brought to this island, are yet alive. They were nine days on the island, and almost starved to death.*

* These Indians had better fortune than ten or twelve Utowawas, who attempting to escape here the pursuit of their enemies of the Six Nations, were carried down the Cataract by the violence of the stream and everyone perished No part of their canoe being ever seen again.

“Now since the way to this island has been found, the Indians go there often to kill deer, which having tried to cross the river above the Fall were driven upon the island by the stream; but if the King of France would give me all Canada, I would not venture to go to this island; and were you to see it, Sir, I am sure you would have the same sentiment. On the west side of this island are some small islands or rocks of no consequence. The east side of the river is nearly perpendicular, the west side more sloping. In former times a part of the rock at the Fall which is on the west side of the island, hung over in such a manner that the water which fell perpendicularly from it, left a vacancy below, so that people could go under between the rock and the water; but the prominent part some years since broke off and fell down; so that there is now no possibility of going between the falling water and the rock, as the water now runs close to it all the way down. . . . The breadth of the Fall, as it runs into a semi-circle, is reckon’d to be about six arpents. The island is in the middle of the Fall, and from it to each side is almost the same breadth; the breadth of the island at its lower end is two-thirds of an arpent, or thereabouts. . . . Below the Fall in the holes of the rocks, are great plenty of Eels, which the Indians and the French catch with their hands without other means; I sent down two Indian boys, who directly came up with about twenty fine ones. . . . Every day, when the Sun shines, you see here from 10 o’clock in the morning to 2 in the afternoon, below the Fall, and under you, when you stand at the side over the Fall, a glorious rainbow and sometimes two rainbows, one within the other.

“I was so happy to be at the Fall on a fine clear day, and it was with great delight I view’d this rainbow, which had almost all the colours you see in the rainbow in the air. The more vapours, the brighter and clearer is the rainbow. I saw it on the East side of the Fall in the bottom under the place where I stood, but above the water. When the wind carries the vapours from that place, the rainbow is gone, but appears again as soon as new vapours come. From the Fall to the landing above the Fall, where the canoes from Lake Eric put on shore (or from the Fall to the upper end of the carrying place) is half a mile. Lower the canoes dare not come, lest they should be obliged to try the fate of the two Indians, and perhaps with less success. They

have often found below the Fall pieces of human bodies, perhaps of drunken Indians, that have unhappily come down the Fall. I was told at Oswego, that in October, or thereabouts, such plenty of feathers are to be found here below the Fall, that a man in a day's time can gather enough of them for several beds, which feathers they said came off the birds kill'd at the Fall. I asked the French if this was true? They told me they had never seen any such thing, but that if the feathers were pick'd off the dead birds, there might be such a quantity. The French told me they had thrown whole great trees into the water above, to see them tumble down the Fall. They went down with surprising swiftness, but could never be seen afterwards; whence it was thought there was a bottomless deep or abyss just under the Fall. I am also of Opinion that there must be a vast deep here; yet I think if they had watched very well, they might have found the trees at some distance below the Fall. The rock of the Fall consists of a grey limestone.

“Here you have, Sir, a short but exact description of this famous Niagara cataract; you may depend on the truth of what I write. You must excuse me if you find in my account no extravagant wonders. I cannot make Nature otherwise than I find it. I had rather it should be said of me in time to come that I related things as they were, and that all is found to agree with my Description, than to be esteem'd a false Relater. I have seen some other things in this my journey, an account of which I know would gratify your curiosity; but time at present will not permit me to write more; and I hope shortly to see you. I am &c.,

“PETER KALM.”

CHAPTER IV

THE WAR OF 1812

Many of the Important Actions of that Conflict were Along the Niagara Frontier Where Fighting was Almost Continuous. Gen. Peter B. Porter Commanded American Forces

THE great European War interfered very materially with elaborate plans that were well under way in the United States, Great Britain and Canada to appropriately celebrate the hundredth anniversary of peace between English-speaking peoples, which plans were of absorbing interest to the people of the Niagara Frontier where was staged many of the important actions of the last war between the United States and Great Britain. Added emphasis was given to this interest by the meeting, at Niagara Falls, Ontario, of the mediators appointed to consider the Mexican situation. Within sight and sound of the world's greatest cataracts, the A B C envoys and the American and Mexican Commissioners had the eyes of the civilized world upon them while negotiating in the interest of that universal peace which now appeals so strongly to all thinking people. Toward this very desirable end, much has been accomplished by treaty upon the initiative of the United States in the past few months. It has been well said that happy are the people who find wisdom, and the nations that get understanding of one another; for out of understanding comes friendship, and out of friendship comes peace.

It is interesting to note, here, in connection with the conference of the mediators at Niagara Falls to deal with the Mexican question, that Andrew B. Humphrey, Secretary of the American Peace Committee, said at the Lake Mohonk Conference in 1911 that "it is significant that the signing of the Treaty of Ghent

on Christmas Eve, 1814, was not brought about by the commissioners, for, after they had been in conference for pretty nearly six months, the two nations, themselves, forced by a strong public sentiment among the peoples of both countries demanding peace, directed the commissioners to conclude a peace pact regardless of the claims set forth by the commissioners and their representative governments. Thus the Ghent Treaty was concluded without reference to the matters which brought on the war. The treaty was forced by public sentiment, and is a monument to that greater force than war—irresistible public opinion.”

The centenary of the signing of the Treaty of Ghent, which established lasting peace between America and Great Britain, as well as the plan to signalize, in fitting manner, the peace which has existed between the United States, Great Britain, and other nations, is of especial interest to the Niagara Frontier because this region was the chief theatre of the War of 1812-14, and is the only section where the fighting was practically continuous. One hundred years ago bloody battles were fought on the Canadian side of the Niagara River, at Fort Erie, Chippewa, Lundy's Lane and Queenston, between contending armies speaking the same tongue.

The war was declared by the President, between the United States and Great Britain, June 19th, 1812. In the order of their location, coming down the river from Lake Erie, and their mention above, rather than priority of date, the Battle of Lake Erie was fought September 17th, 1814. It was a sortie, and afterwards Sir William Napier wrote that “it is the only instance in history of a besieging army being absolutely routed in a single sortie.” This sortie was planned and led by General Peter B. Porter of Niagara Falls. The one hundred years peace anniversary is also of particular interest because General Porter, a resident of the Niagara Frontier, was commander of the American forces in this section in the War of 1812. General Porter was also Secretary of State of the State of New York, representative in Congress for this district, Secretary of War in the Cabinet of President John Quincy Adams, and a member of the American Boundary Commission of 1819. His son, Colonel Peter A. Porter, led a regiment to the Civil War from the Niagara Frontier, and was killed at Cold Harbor, Virginia, while his grandson, Honorable Peter A. Porter, as a member of the State Legislature,

secured the franchises for The Niagara Falls Power Company which inaugurated the era of electrical power, and was a representative in Congress like his grandfather.

The Battle of Chippewa was fought within sight of the Falls of Niagara July 5th, 1814. Batteries were located on both sides of the mouth of Chippewa Creek during the War of 1812.

On July 25th, 1814, at another picturesque spot, in sight and sound of the great cataracts, in fact on the highest point of land in this section, was fought the Battle of Lundy's Lane. The setting was particularly spectacular in view of the fact that the battle was commenced late in the afternoon and continued until midnight by moonlight. This battle is also especially distinguished by the fact that both armies claim to have won it, and it is said to have been the only battle in history which both sides claim to have won. That situation obtains even to this day, and until recent years, the Canadians annually celebrated the alleged victory of British arms.

Upon the occasion of the hundredth anniversary of the Battle of Lundy's Lane, July 25th, 1914, an impressive celebration took place in the cemetery upon this battlefield, participated in by both Americans and British, and interesting addresses were delivered by distinguished citizens of the United States and Canada. The era of good feeling between the Americans and British really had its inception at Niagara Falls, New York, May 1, 1898, when the 42d Separate Company, of Niagara Falls, New York, a part of the New York State Militia, marched away to take part in the Spanish-American War, the British came over from Niagara Falls, Ontario, and walked side by side with the American soldiers, while the Stars and Stripes and Union Jack floated together in the sunlight. This was on the same date as Admiral Dewey's famous victory at Manila Bay.

On October 12, 1812, another battle was fought, at Queenston Heights, which the British won, but at which the British commander, General Brock, was killed. Upon the escarpment above the battlefield, where it can be seen for many miles around, stands a noble monument erected to the memory of General Brock. From its top is obtained one of the most magnificent views to be found in all America, covering the Niagara Peninsula, the Niagara River and Lake Ontario. Upon the spot where General Brock fell is a cenotaph suitably inscribed.

At the mouth of the Niagara River, on the Canadian side, was Fort George. The extensive earthworks are still discernible. The construction of the Fort was commenced in 1796, and it was enlarged prior to the War of 1812, and was the military center of that region during the war one hundred years ago. Farther up the river is Fort Mississaga, consisting of a stone blockhouse and high earthworks, which was built by the British in 1814, and its guns covered Fort Niagara on the American side of the river.

Still another historic point of interest in that section is Navy Hall, which was the residence of Governor Simcoe, the first Governor-General of Upper Canada.

There are many points of historic interest along the American shore of the Niagara, and the whole Niagara Frontier is impregnated with historic lore dating back to the earliest days of American civilization, but we are concerned now with the events of one hundred years ago and the coming anniversary.

In striking contrast with "Lake Erie's shelving walls of land clad with wealth and comfort o'er, with Lake Ontario's prosperous strand decked with city pictures grand," and with the marvellous development of the Niagara Frontier generally, was the condition of western New York during, and at the close of the War of 1812.

Lossing, in his history of the United States, relates that the British and Indians pillaged and destroyed the six or eight houses that constituted the village of Youngstown, which immediately adjoins Fort Niagara; that they then marched upon the village of Lewiston to the south, and plundered, burned and butchered to their hearts' content; that five hundred Indians, under General Riall, went from Queenston to Lewiston on hearing a gun fired at Fort Niagara announcing its capture. Lossing then quotes from a letter written by General Drummond that day as follows:

"A war whoop from five hundred of the most savage Indians (which they gave at daylight, on hearing of the success of the attack on Fort Niagara) made the enemy (at Lewiston) take to their heels, and our troops are in pursuit. We shall not stop until we have cleared the whole frontier. The Indians are retaliating the conflagration of Newark. Not a house within my sight but is in flames. This is a melancholy but just retaliation."

General Drummond and the Britishers were incensed because the Americans had burned some houses in the little village of Newark near the mouth of the Niagara River on the Canadian side.

Regarding the situation that followed, Orsamus Turner, the historian of the Holland Purchase which included a large part of western New York, wrote:

"It is impossible now to give the reader such an account of the conditions of things in western New York during that ill-fated winter (which was 1814) as will enable him to realize the alarm, the panic, the aggregate calamity that prevailed. On the immediate frontier all was desolate; the enemy holding possession of Fort Niagara, detached parties of British and Indians came out from it, traversed the frontier where there was nothing left to destroy, enlarging the theatre of devastation, and spreading alarm among those who had been bold enough to remain in the fight. West of the north and south line they would pass through the village of LeRoy, more than one-half of the entire population had been driven from their homes by the enemy, or had left them in fear of extended invasion. The entire back-woods neighborhoods were deserted, one hundred log cabins were desolate, and the signs and sounds of life were mostly the deserted cattle and sheep lowing and bleating, famishing for the want of fodder. There were none left to deal out to them."

On January 8th, 1814, a committee of relief and safety was appointed, and this committee issued the following:

"Niagara County and that part of Genesee which lies west of Batavia are completely depopulated. All of the settlements in a section of country forty miles square, and which contained more than 12,000 souls, are effectually broken up. These facts you are undoubtedly acquainted with; but the distress they have produced none but an eye witness can thoroughly appreciate. Our roads are filled with people, many of whom have been reduced from a state of competency and good prospects to the last degree of want. So sudden was the blow by which they had been crushed, that no provision could be made to elude or to meet it. The fugitives from Niagara County, especially, were dispersed under circumstances of so much terror, that in some cases mothers find themselves with strange children, and children are seen accompanied by such as had no other sympathies with them than those of common suffering."

For specific instances, Historian Lossing quotes as follows, from a letter written in LeRoy January 6th, 1814:

“Witnesses testified to the following facts: The Indians massacred and burned Mrs. Lovejoy in Buffalo; massacred two large families at Black Rock, namely, Mr. Luffer’s and Mr. Lecort’s; murdered Mr. Gardner; put all of the sick to death at Youngstown, and killed, scalped, and mangled sixty at Fort Niagara after it was given up. Many dead bodies are yet lying unburied at Buffalo, mangled and scalped. Colonel Marvin counted thirty-three this morning. I met between Cayuga and this place upward of one hundred families in wagons, sleds, and sleighs, many of them with nothing but what they had on their backs; nor could they find places to stay at.”

Look upon the above picture one hundred years ago, of the Niagara Frontier devastated.

Then look upon the picture of the Niagara Frontier today budding and blossoming as a rose, and teeming with industrial activity.

At the head of the Niagara River and at the foot of Lake Erie is the great city of Buffalo, with about half a million of people, exhibiting the activities of modern life, a great lake commerce, a great canal commerce, a great manufacturing and mercantile business.

Farther down the river are two more cities, Tonawanda and North Tonawanda, and there is the second largest lumber market in the world at the intersection of lake and canal navigation, together with much manufacturing. Then the two cities of Niagara Falls, New York and Niagara Falls, Ontario, the one with forty-two thousand and the other with ten thousand people. Here is the seat of the first and greatest electrical power development in the world, the aggregate quantity now developed being 600,000 horse power, with more to follow. Niagara Falls, New York, is the chemical and abrasive manufacturing center of the United States. At least \$40,000,000 worth of fifty kinds of manufactured goods is produced there annually. Steam railroad tracks are everywhere. Niagara power operates 374 miles of electric railroad tracks on the Niagara Frontier, and runs the street cars in Oswego, two hundred miles away. In its thirty-six miles of length, the Niagara River is spanned with five bridges, all wonders of bridge construction, one of the steel arches at



GENERAL PETER B. PORTER



COLONEL PETER A. PORTER

Niagara Falls having the largest span in the world, 1,248 feet. Niagara County is one of the chief fruit-growing regions of the world, apples, peaches, pears and plums predominating. There are over one million apple trees in Niagara County. No stronger contrast is possible than is presented by this modern garden of Eden, as compared to the desolation of the same territory one hundred years ago.

Peter A. Porter has presented to the Niagara Frontier Historical Society a most interesting document bearing on the early history of the Niagara Frontier. It is worded as follows:

“CONGRESS OF THE UNITED STATES,
“In the House of Representatives,

“Wednesday, the 14th of June, 1809.

“*Resolved*, That the Committee of Commerce and Manufactures be instructed to enquire into the expediency of removing the offices of Collector of the Customs from Fort Niagara to Lewiston, in the District of Niagara; and from Buffaloe Creek to Black Rock in the District of Buffaloe; and that they report by bill or otherwise.

“—*Extract from the Journal.*

“PATRICK MAGRUDER, *Clerk.*”

On the back it is endorsed.

Ports of Entry

Not referred to this Committee.

Nov. 1809

Mr. Porter

Mr. Newton

Commerce & Manufactures.

These notations show that it was evidently sent by mistake to some other committee; by whom it was sent to the proper one.

The story of the early customs houses on the Niagara Frontier for the removal of whose location to more convenient points this resolution was the first move—is interesting local history.

The first United States custom house on the Niagara River was naturally located at Fort Niagara; which, when Britain finally evacuated it, in 1796, was the only occupied spot thereon. And the Collector was probably a United States army officer.

The customs district of Buffalo was not formed until years later. The first collector of customs there was Erastus Granger, who also held the office of postmaster, and was also the United States Indian Agent.

In 1805, the State of New York opened the Mile Strip for purchase and settlement. At that sale, the newly-formed firm of Porter, Barton & Company bought a number of lots; and soon after, they secured, when the State publicly offered to award it to the responsible bidder, who would keep the roadbed in good shape, accept the schedule of tolls which the State should decide on, furnish transportation, and build warehouses, for the shortest term of years—the exclusive lease of the portage between Lewiston and Schlosser, for a term of fourteen years.

The village of Lewiston had been plotted by the State; and as that was the lower end of the portage, the vessels which Porter, Barton & Company soon had on Lake Ontario all docked there. But all the entry and clearance papers, etc., had to be procured at Fort Niagara; that necessitated extra stops and needless delays.

At Buffalo, Erastus Granger kept his office, for all three of the federal positions he held, well down town; but at that time no vessel ever entered nor cleared from Buffalo Creek; it was unnavigable, owing to the sand bar at its mouth.

All the navigation at the source of the river, on the United States side, docked at and started from the Black Rock, which was located a little south of the bend of Niagara Street in Buffalo. Therefore all entry papers had to be taken to, and all clearance papers had to be gotten from the Collector's office some two miles away, in Buffalo.

In 1808, Peter B. Porter, then a resident of Black Rock, was elected Member of Congress; his district embracing all of western New York.

And this resolution was introduced by him.

He and Erastus Granger belonged to different political parties; Granger having been sent out here, primarily to help control the politics.

There was no opposition to the removal of the custom house from Fort Niagara to Lewiston. All the people of that section favored it, because it would facilitate commerce and would build up the village of Lewiston.

But at Buffalo, Granger bitterly opposed the removal of the office from Buffalo to Black Rock. Primarily he felt it would lessen his political influence. Personally, he did not want to have the custom house and the postoffice in separate buildings; he specially did not want them two miles apart, for that would necessitate much extra travel for him.

The Black Rockers pointed out that it was farther from Granger's home (which was out near Forest Lawn) to the Black Rock, than it was to the post-office; but that did not meet Granger's complaint about the extra travel for him, if the custom office should be at the Black Rock.

And when the Black Rockers naively suggested that he need not take those extra journeys, and that a sure way to prevent his having that trouble was for him to resign either the post-office or the collectorship, he denounced the suggestion bitterly, as an infraction of his personal rights.

Granger's chief and most harped-on argument, however, was that Porter was using his position as Member of Congress to further the interests of his firm, in seeking to change both locations.

Porter frankly admitted that in both cases the change would result in great conveniences to his firm, but said that, so far as Buffalo was concerned, a change there would also accommodate better every person who had customs business, except Granger himself.

He also pointed out that at Buffalo (and the same was true as to Lewiston) practically all of the customs business was done by the vessels of his firm, or by vessels in which they had financial or exchange of business relations.

Porter was a close personal friend and a supporter of President Madison. He readily agreed to a compromise, namely that the Collector's office for the Buffalo district should be located at Black Rock for half of the year and at Buffalo for the other half. The committee reported by a bill, and an Act of Congress was passed, leaving the President to make the terms of the division. And Madison decided that from fall to spring it should

be located at Buffalo. Granger and his political friends were bitterly disappointed, but all vessel men were entirely satisfied. Granger retained both offices, collector and postmaster, and was not required to go down to Black Rock during the winter months.

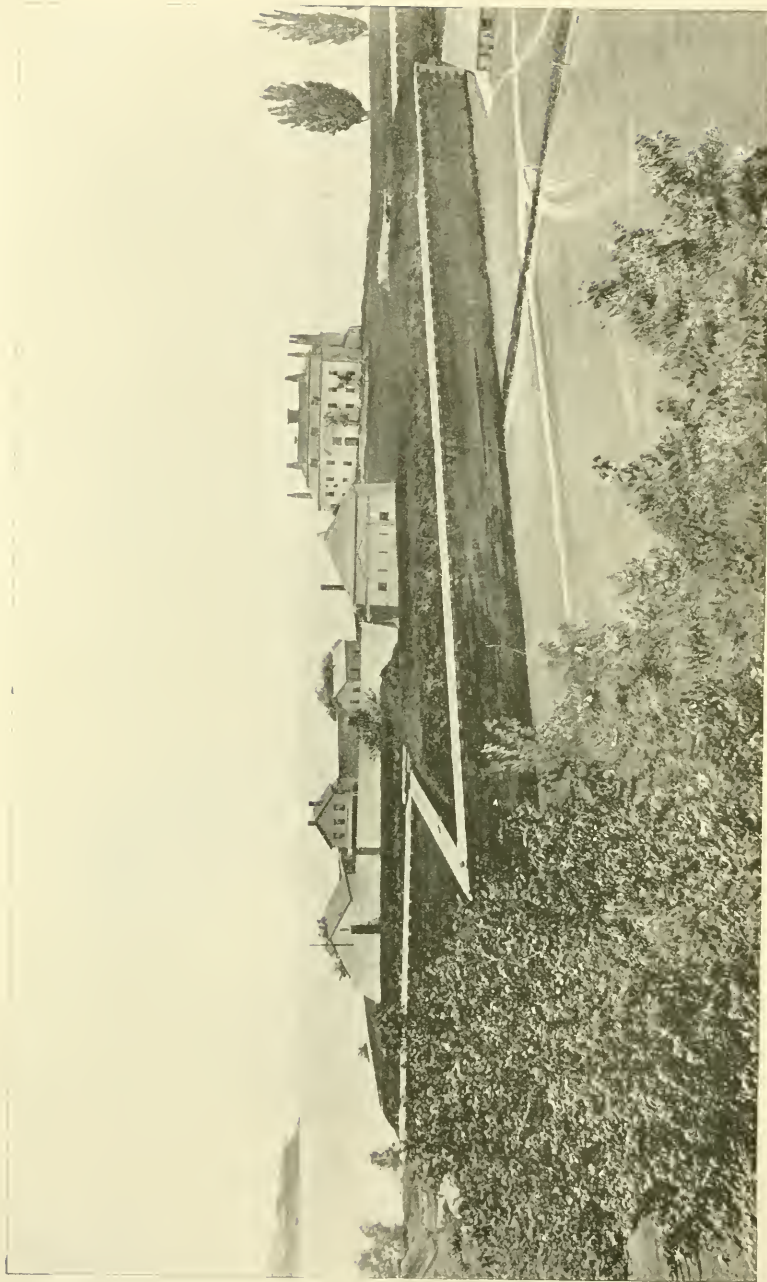
The Customs District of Niagara was created by Act of Congress in 1799, and included all the shores and waters of Lake Ontario and Lake Erie and the Niagara River lying within the State of New York west of the Genesee River, with the port of entry at Fort Niagara. The District of Buffalo Creek on the west and the District of Genesee on the east were set off from the District of Niagara in 1805. The port of entry was removed from Fort Niagara to Lewiston in 1811, and from Lewiston to Suspension Bridge in 1863. The name of the port was changed to that of Niagara Falls, following the erection of the city of Niagara Falls, in 1892. The Niagara Falls District extended from the east bank of the Oak Orchard Creek to the channel of the Tonawanda Creek. The present customs collection district begins at the old boundary of the Niagara District and Oak Orchard Creek, in Orleans County, and extends up Lake Ontario to include Olcott Beach, to the Niagara River and the whole length of the Niagara River, the sub-ports being Youngstown, Lewiston, Niagara Falls, North Tonawanda, Tonawanda, and up Lake Erie to Dunkirk in Chautauqua County, with the main office in Buffalo. This port also sends officers to Toronto, Midland, Collingwood, and Muskoka, Ontario.

The Lewiston Academy was incorporated April 17th, 1828. It was one of the leading educational institutions of this section for some years, others being the Wilson Collegiate Institute and the Yates Academy in Orleans County. Many men afterwards prominent in public affairs were educated there. At the time that the academy was established, the ferry across the Niagara River at Lewiston was the gateway between the East and the West, and the proceeds of this ferry were appropriated by an Act of the Legislature in 1826 for the establishment and maintenance of the school. At the time of the Navy Island War the pupils from Canada were withdrawn and the academy had a fitful existence after that and the picturesque building has been in disuse for many years.

Niagara County enjoys nation-wide and world-wide distinc-



HON. PETER A. PORTER



FORT NIAGARA

tion in many respects, and not the least of these is in respect to its highways. The first roads, of course, were Indian trails, and the principal trail of the Iroquois nation was from the Hudson to the Niagara River. The Iroquois Trail emerged from the Tonawanda Swamp southeast of Royalton Center, coming out on the Lockport and Batavia Road at Millard's Brook and thence upon Chestnut Ridge to Cold Springs. It struck the Ridge at Warren's Corners and continued to Lewiston, which was the gateway to the West across the Niagara River. There was another route called the Ontario Trail coming from Oswego and Irondequoit Bay along the Ridge Road to the west line of Hartland, where it turned southwest to Cold Springs. On these trails barbarism went forth to war and the chase and civilization marched in.

One of the most famous of our highways was the Portage Road, or carrying place of the Niagara, which ran from the top of the Lewiston escarpment to Schlosser Dock on the upper Niagara River and was two and one-half to three leagues long. It was built, of course, to avoid the cataracts of the Niagara, and it was related in the early days that the beautiful oak forest through which it ran was sufficiently open to permit a person to see six hundred paces. In 1718 the portage was called a fine highway. What would the people who saw it then think of the paved highway running solid from Buffalo to the mouth of Niagara River now? At that time rude carts passed over the portage two or three times a year. Now people riding in an automobile between the Buffalo city line and the Niagara Falls city line frequently count four hundred or five hundred automobiles going in the opposite direction within an hour. The first railroad in the United States was the tramway down the Lewiston Mountain to the Niagara River at the end of the portage. Fort Little Niagara was built at the upper end of the portage by the French in 1750 to guard the road, and later the portage was guarded by stockades built at different points between the two landings. Most of the goods were transported over the portage on the backs of Indians.

The other most famous highway in Niagara County is the Ridge Road. In 1810 the State Legislature appointed General Peter B. Porter of Niagara Falls, DeWitt Clinton, Gouverneur Morris, and Steven Van Rensselaer as a committee to investi-

gate proposed routes for water communication between the Hudson River and the Great Lakes. They came west of the Falls of the Genesee and then over the Ridge Road to Lewiston. At that time DeWitt Clinton said, "From the Genesee near Rochester to Lewiston on the Niagara there is a remarkable ridge or elevation of land running almost the whole distance, which is seventy-eight miles, and in a direction from east to west. Its general altitude above the neighboring land is thirty feet, and its width varies considerably; in some places it is not more than forty rods. This strip of land appears as if intended by Nature for the purpose of an easy communication. It is, in fact, a stupendous natural turnpike, descending gradually on each side and covered with gravel, and but little labor is requisite to make it the best road in the United States."

Judge Augustus Porter first came to Niagara Falls in 1795, learned of the ridge from the Indians, and had the line of a road traced along it in 1798. Along the eastern portion of Niagara County the ridge was discovered in 1805. In 1808 the Ridge Road was laid out by General Rhea and others. In 1814 a State appropriation of \$5,000 was expended on parts of the Ridge Road west of Rochester, and it was laid out under State authority in 1815. At the time of laying out the Ridge Road there was no other road entering Niagara County from the East. By the ridge most of the Niagara pioneers entered the county. There was a stage route established on the Ridge Road from Canandaigua to Lewiston in 1816 over which tourists were brought to Niagara Falls, and it continued until the advent of railroads in 1850. Along the vicinity of the Ridge Road is the famous Niagara limestone which forms the mountain ridge and which at Niagara Falls is 164 feet thick and makes possible the great cataracts by protecting the shale from rapid erosion. The other two groups of stone in this vicinity are the Medina and Clinton stone. The Ridge Road is the only highway in the county six rods wide.

Settlements began on the ridge west of Warren's Corners before the Holland Company cut out the old trail from Batavia into a passable road; and the ridge was used for transportation with teams between Warren's Corners and Lewiston sooner than in any other part. East of this section there was nothing that could be called a road before 1803. As late as 1809 the ridge

near the county line was encumbered with logs and brush. After other parts of the ridge had been made passable, the swamp which extended four miles between Warren's Corners and Wright's Corners was an obstacle. This is now the town line between Lockport and Newfane, and a part of State Highway No. 30. In the spring of 1813 General Dearborne, representing the United States, contracted with Isaac B. Taylor to build for \$2,900 a log causeway through the low ground. The work was done that season, but was early and often undone. The logs were frequently afloat in the spring and autumn and annual repairs were made by town appropriations and subscriptions, by stage proprietors until 1823, when the franchise for a turnpike was granted to David Maxwell, who subsequently sold it to the town of Newfane. The gravel with which the Ridge Road is covered was deposited there by the water, and the stones everywhere indicate by their shape the abrasion and agitation produced by that element. Geologists have generally concluded that this wonderful ridge was a mammoth bar on the bed of Lake Ontario when the lake rolled over the country south to the brow of the so-called mountain ridge.

Now the Ridge Road is paved its entire length through Niagara County with the exception of two or three miles in the town of Lewiston, and that parcel of road will be paved in the near future. It will soon be possible to travel in automobile the entire distance from Rochester to the Niagara River upon a paved road running over the old stage route. If DeWitt Clinton and his associates could see this magnificent boulevard now they would conclude that the plans of Nature had been fulfilled by man in this twentieth century, just about a hundred years after the projector of the Erie Canal first viewed that region.

Now Niagara County has more miles of improved highways than any county of its size in the United States. Across it from east to west is State Route No. 30, starting at Rouse's Point in the extreme northeastern part of the State, and across it from north to south is State Route No. 18, which starts at Ripley near the Pennsylvania line and runs to Lake Ontario. This great work would not now be completed except for the million-dollar appropriation passed through the Legislature by Senator Robert H. Gittins, of Niagara Falls, and Route 30 would not be on the Ridge Road if a strong fight had not been made to emphasize

that, as DeWitt Clinton said one hundred and five years ago, it is a great natural highway intended by Nature as a means of easy communication. In days gone by, I have walked over the trail of DeWitt Clinton and General Porter and ridden through the sand in lumber wagons and stage coaches. Today we speed along the oak-bordered boulevard seeing luxuriant fruit orchards on every hand, in automobiles that almost discount the "roaring loom of time itself."

CHAPTER V

FREE NIAGARA

Interesting First-Hand Details of the Great Movement to Establish
the New York State Reservation at Niagara

FREE NIAGARA was the forerunner of greater industrial Niagara. That fact may not stand clearly in the mind of every person contemplating the industrial city of Niagara Falls today and the marvellous revolution which the world's first and greatest electrical power development has wrought in many of the activities of life. When the great State of New York, at a large expenditure of its treasure, made Niagara free to all mankind forever, made possible the contemplation of Nature's grandest scene by all of the inhabitants of the earth without the exaction of toll, and under the best conditions, it builded even wiser than it knew, although there was great popular interest in the splendid philanthropic project at the time. When the plan had been suggested, it aroused the active, sympathetic interest of the best and greatest men and women of this and other States and of the Dominion of Canada. Many eloquent addresses were made, and hundreds of letters written by the leading people of that time, and the noblest sentiments were expressed, coming from the brightest intellects of the age. From the time when Father Hennepin first viewed the mighty cataracts down the vista of the years that witnessed the settlement and civilization of the American Continent, the greatest citizens of every country and every clime, poets and prose writers, statesmen and rulers, the most distinguished in every walk of life, had paid court at Nature's shrine and given to history and to literature their best thoughts about the Falls of Niagara and

the most spectacular, yet beautiful and potential river, on the globe. All of the splendid sentiments accumulated in the years gone by were brought to a climax when the movement was inaugurated to emancipate Niagara and make it the priceless heritage of all human kind as long as the world endures. Then came the project of utility, equally important and the two admirably balanced, and to well-informed and sensible people, non-conflicting. As the Declaration of Independence, written by Thomas Jefferson, afterwards one of our great Presidents of the United States, and the Proclamation of Emancipation, written by Abraham Lincoln, another great President of the United States, are the two greatest documents in our history, not only because of their literary excellence, but principally because of their stupendous interest to humanity, so was the project to make Niagara free, of far-reaching import to the world, and as time passes its significance will become more impressive.

All great movements affecting the public require years of agitation and education before consummation. So it was with the free Niagara project. In fact when the first legislative bill was taken to a governor of the State of New York he said that there was no use of spending the people's money to make Niagara free because just as much water would go over the Falls in the then existing conditions.

Again, all great movements require a leader. Scan the pages of American history and you will invariably see that in connection with each the name of some one individual stands out above all others, although many people may do valuable work in co-operation. Again so it was with the free Niagara project. Inseparably connected with the State Reservation at Niagara is the name of the late Hon. Thomas V. Welch. Not only did Mr. Welch lead the movement extending over several years that finally resulted in success, but as superintendent for eighteen years, up to the time of his death, he cleared the shoreline and vicinity of the Falls of the objectionable features and did the constructive work that has made the State Reserve that fringes the great cataracts, one of the most beautiful spots in all America. Referring to Mr. Welch and the Niagara Park in a newspaper article twenty-one years ago, which was nine years previous to his death, the writer said that he was "a gentleman who has had more to do with arousing public sentiment previous to its inauguration,

and with the care and improvement of it since 1885, than any other person. Mr. Welch's name is so closely connected with all reservation matters that it will never be eliminated, and his name will go down to posterity not only as a splendid Christian gentleman and scholar, keen business man, and patriotic American, but as one of the greatest philanthropists of the age. These statements are true, and there is no logical reason why they should not be placed in print during the lifetime of Mr. Welch, as well as in his obituary." Of course, many prominent people both here and elsewhere did effective work in this most laudable undertaking, but Mr. Welch's name led all the rest.

In the final consummation of the free Niagara project, great names were involved. The first bill was signed by Governor Grover Cleveland, a western New Yorker, who afterwards became twice President of the United States. The second bill was signed by Governor David B. Hill, who afterwards became a United States Senator from the State of New York. The scholarly oration delivered at the dedication of the New York State Reservation at Niagara on July 15, 1885, which was the greatest single day's event in the history of Niagara Falls, when seventy-five thousand people came to see and hear, was delivered by James C. Carter of New York, the recognized head of the bar of the United States.

In the year 1869 the necessity of taking some measures to preserve the beauty of the natural scenery of the Falls of Niagara from destruction was discussed by Frederick E. Church, the artist, Frederick Law Olmsted, the Hon. William Dorsheimer, once Lieutenant-Governor of the State, Richardson the artist, and many others, but no action was taken until several years afterwards, when, at the suggestion of Mr. Church, William H. Hurlburt communicated with the Earl of Dufferin, then Governor-General of Canada, in relation to the establishment of an international park on both sides of the river.

During a speech delivered before the Ontario Society of Artists in Toronto September 26, 1878, Lord Dufferin made the following remarks with reference to the project:

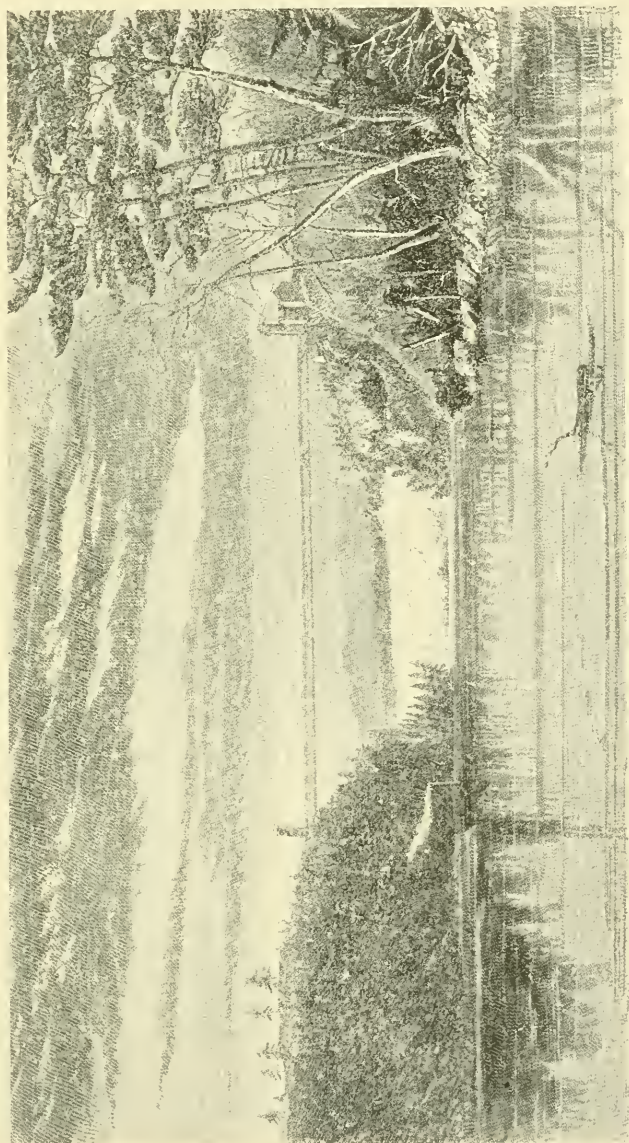
"And now, gentlemen, before I sit down there is another topic to which I would for a moment refer. I am about to confide to you a mission which I think sufficiently connected with your prosperity to justify me in asking your assistance. In your

neighborhood there exists, as you are aware, one of the most wondrous, beautiful and stupendous scenes which the forces of Nature have ever constructed. Indeed, so majestic is the subject that though many skillful hands have endeavored to transfer it to canvas, few have succeeded in adequately depicting its awe-inspiring characteristics. I allude, of course, to the Falls of Niagara. But I am sure everyone will agree with me in thinking that the pleasure he may have derived from his pilgrimage to so famous a spot, whether as an artist or a simple tourist has been miserably marred and defeated by the inconvenience and annoyance he has experienced at the hands of the various squatting interests that have taken possession of every point of vantage at the Falls; who tax the pockets and irritate the nerves of the visitor, and by whom, just at the moment when he is about to give up his whole being to the contemplation of the scene before him, as he is about to feel the inspiration of the natural beauties around him, his imagination and his poetic faculties are suddenly shocked and disorganized by a demand for ten cents. [Loud laughter.] Some weeks ago I had the good fortune to meet His Excellency, the Governor of the State of New York, and I then suggested to him an idea which has been long present in my mind, that the governments of New York and Ontario, Canada, should combine to acquire whatever rights may have been established against the public, and to form around the Falls a small public international park ['Hear, hear'] not, indeed, decorated or in any way sophisticated by the penny-out-of-the-landscape gardener, but carefully preserved in the picturesque condition in which it was originally laid out by the hand of Nature."

William H. Hurlburt, who communicated with Lord Dufferin, was then editor of the *New York World*.

The movement for the redemption of Niagara may be said to have had its origin in suggestions contained in a message from Governor Lucius Robinson sent to the Legislature of this State January 9, 1879. Governor Robinson then said in part:

"The civil jurisdiction over the Falls of Niagara, as well as the shores and waters of Niagara River, is divided between the State and the Province of Ontario, Canada. But, in one sense, the sublime exhibition of natural power there witnessed is the property of the whole world. It is visited by tourists from all quarters of the globe, and it would seem to be incumbent upon



THE FIRST RAILWAY SUSPENSION BRIDGE BUILT ACROSS NIAGARA RIVER



LOOKING TOWARD OUTLET OF NIAGARA RIVER, WITH LAKE ONTARIO IN THE DISTANCE
Published in London in 1837

both governments to protect such travelers from improper annoyance on either side. It is, however, well known, and a matter of universal complaint, that the most favorable points of observation around the Falls are appropriated for purposes of private profit, while the shores swarm with sharpers, hucksters, and peddlers, who perpetually harass all visitors. In the course of the last summer in a casual meeting with Lord Dufferin, then Governor-General of Canada, he suggested the propriety of some steps on the part of the State of New York and the Province of Ontario to remedy the abuses which he had seen and deeply regretted. The proper course, if such a plan were deemed advisable, would undoubtedly be the appointment of commissions by both the governments, to confer together as to the details. Should such a commission be appointed by the authorities of Ontario, I recommend that you provide for the appointment of a similar one to consider the subject. There can be no doubt that many persons abstain from visiting the Falls in consequence of the annoyances referred to, nor can there be any reasonable doubt that the removal of these objections would largely increase the number of visitors annually."

By a joint resolution of the Legislature, the Commissioners of the State Survey were asked to "inquire, consider and report what, if any, measures it may be expedient for the State to adopt for carrying out the suggestions contained in the annual message of the Governor with respect to Niagara Falls."

James F. Gardner, director of the State Survey, and Frederick Law Olmsted performed this work. On March 22, 1880, a special report was submitted to the Legislature by ex-Governor Horatio Seymour, president of the board. In this report were contained the following pertinent points:

"That the scenery of Niagara Falls has been greatly injured; that the process of injury is continuous and accelerating; and that if not arrested, it must in time be utterly destructive of its value. There is no American soil from which the Falls can be contemplated, except at the pleasure of a private owner, and under such conditions as he may choose to impose; none upon which the most outrageous caprices of taste may not be indulged, or the most offensive interpolations forced upon the landscape."

They recommended the extinguishment of the private title in so much land as should be regarded as absolutely necessary

for the purpose, and that the state should, by purchase, acquire a title to such land, and hold it in trust for her people forever.

During the winter of 1881, Major James Low, afterwards collector of the port of Niagara Falls, then member of Assembly for the second district of Niagara County, introduced in the Assembly a bill providing for a survey. Alonzo B. Cornell was then governor and was unfriendly to the bill. Two years later, when Mr. Welch was laboring with Governor Hill to get his signature to the bill which had then been passed, Cornell said to Mr. Welch: "It is a good thing for you that I am not now governor; I would veto your bill." When asked if he did not think that the scenery of Niagara Falls should be preserved and that the world should view them without expense he replied: "Why shouldn't the people pay for the privilege; isn't it a luxury?" Col. Timothy E. Ellsworth of Lockport was then in the State Senate, and being the attorney for the Porter and Townsend estates, which were the largest owners of land to be taken by the State, held a neutral position in regard to the bill, and it was considered that his attitude would be determined by the nature of the bill and how it effected these large interests. Accordingly, the Low bill was not passed.

In the meantime, the Niagara Falls Association, whose object was "to preserve the scenery of the Falls of Niagara," was organized. This organization had its birth at a meeting of prominent men held at the residence of Howard Potter in New York City on December 6, 1882.

Grover Cleveland had just been elected governor, and being from western New York, it was known that he was friendly to Niagara Falls, and it was believed to be an opportune time to push the project. It was, therefore, determined to appeal to the people of the State, and a committee was appointed consisting of J. Hampton Robb, Buchanan Winthrop, James F. Gardner, J. T. Rensselaer, and Francis H. Weeks, to formulate a report to be made at a public meeting which was held in Municipal Hall, Madison Avenue, New York, January 11, 1883. At this meeting D. Willis James presided, and the committee reported in favor of organizing the Niagara Falls Association. Officers were elected as follows: President, Howard Potter; vice-presidents, Daniel Huntington, George William Curtis and Cornelius Vanderbilt; secretary, Robert Lenox Belknap; treasurer, Charles

Lanier; corresponding secretary, the Rev. J. B. Harrison. The committee previously named was made the executive committee. Mr. Harrison, whose residence was Franklin Falls, N. H., was employed to canvass the State and write articles in the interest of the project. An address written by George William Curtis was also sent out.

The Executive Committee of the Association drew a bill which was introduced into the Assembly March 2, 1883. Hon. Thomas V. Welch then represented the second district of Niagara County, and had been laboring indefatigably for the project, but it was considered by Mr. Welch, Senator Ellsworth, and the other friends of the measure, good policy to have some New York member introduce the bill, and accordingly Mr. Welch, upon receipt of the document from J. Hampton Robb, which the Executive Committee had drafted, returned it to the latter with the suggestion that Hon. Jacob F. Miller of New York be requested to introduce it. The bill went to the Assembly March 2, 1882, and several hearings were had upon it before the Committee on Ways and Means, at which the Right Rev. Bishop Doane, Messrs. Potter, Dorsheimer, Robb, and others spoke. It finally passed the Assembly with only one or two votes to spare, and then went to the Senate. Here Senator Ellsworth desired some alterations made, but it was finally passed and became a law by the signature of Governor Cleveland, April 30, 1883. Among those who used their influence in favor of the measure were John Jay, George William Curtis, Hugh McLaughlin, Hubert O. Thompson, President Chester A. Arthur, United States Senators Elbridge G. Lapham and Warner Miller, ex-Senator Roscoe Conkling, John G. Whittier, Oliver Wendell Holmes, college presidents, Andrew D. White, Mark Hopkins and Judge Noah Porter.

The Act provided for the appointment by the Governor of five commissioners to hold office for five years without compensation, and Governor Cleveland named as such Hon. William Dorsheimer, Hon. Andrew H. Green and Hon. J. Hampton Robb of New York, Hon. Sherman S. Rogers of Buffalo, and Martin B. Anderson, LL.D., Rochester. Mr. Green continued as commissioner up to the time of his death a few years ago. On the 29th of May, in Albany, the commission organized by the election of Martin B. Anderson, as president, and J. Hampton Robb as secretary and treasurer.

On February 17, 1885, the commissioners made a report to the Legislature setting forth their recommendations and reciting what they had done. After stating at some length the conditions then existing there, they reported that they had met at Niagara Falls to view the lands on June 9, 1883, and after a detailed examination found it "desirable to select and locate as proper and necessary to be reserved for the purpose of preserving the scenery of the Falls of Niagara and restoring the said scenery to its natural conditions, the following lands: Goat Island, Bath Island, Three Sister Islands, Bird Island, Luna Island, Chapin Island, and the small islands adjacent to said islands in the Niagara River and the bed of said river between said islands and the main land for the State of New York, and also the bed of said river between Goat Island and the Canadian boundary; also a strip of land beginning near Port Day, running along the shore of said river, to and including Prospect Park and the cliff and the debris slope, and including at the east end of said strip sufficient land not exceeding one acre, for purposes convenient to said reservation, and also including all lands at the foot of said Falls." They then requested the State engineer and surveyor to make a map of the lands located. Thomas Evershed, then division engineer of the western division, afterwards designer of the great tunnel here, made a map and presented it to the commissioners, September 27th, 1883. On December 8th the map was approved.

This done, the commissioners applied to the court for the appointment of three appraisers to appraise the lands they had selected. The court named Luther R. Marsh of New York, Matthew Hale of Albany and Pascal P. Pratt of Buffalo as appraisers. Messrs. Allen, Movius and Wilcox of Buffalo were retained as attorneys.

Throughout the month of July the appraisers held sessions continuously to take testimony regarding the property. The claims of the property owners amounted to about \$4,000,000, but the final aggregate award was \$1,433,429.50. As is well known, the various members of the Porter family in its several branches, consisting of Hon. Peter A. Porter, George M. Porter, Jane A. Porter, A. H. Porter, heirs of A. Porter, V. M. Porter, A. A. Porter, J. M. Porter, A. S. Porter, heirs of P. B. Porter, and the Townsend family, consisting of E. J. and J. S. Townsend and others, were the owners of the largest proportion of the



THE RAPIDS ABOVE THE FALLS OF NIAGARA

View made in 1837



FIRST BRIDGE TO GOAT ISLAND

property taken. The Prospect Park Company was allowed \$325,000. Other large property owners were the Niagara Falls Paper Company, \$156,666; Whitney, Jerauld & Company, \$110,600; Thomas Tugby, \$60,200; R. F. Hill, \$81,600.

Then followed a long siege of hard work to get the Legislature to make provisions for the payment of the \$1,433,429.50 awards and take other steps to establish the reservation. In the autumn of 1884 Hon. Walter P. Horne, later postmaster, police justice, and city clerk, had been elected member of Assembly from this district and Senator Ellsworth re-elected. At the beginning of the session of the Legislature of 1884-5, the chances were regarded as bright for securing the appropriation. The necessary bill had been drawn up, and Messrs. Welch and Robb took it to Albany. At that time Thomas E. Benedict, later public printer of the United States, was deputy comptroller of this state. Mr. Benedict had opposed the reservation project strenuously from the start and he said to Messrs. Welch and Robb that he was sorry to see two such good fellows in Albany on such an errand, and that the State would never appropriate that amount of money for the purpose. Mr. Benedict said, however, that Isaac H. Maynard, then deputy attorney-general of the State, had outlined to him a plan that would be more likely to succeed. This plan was the one that was finally adopted. It was that the State pay \$433,429.50 out of the treasury and issue bonds for the other one million dollars distributed over ten years, payable \$100,000 per annum. These bonds were all paid at the end of ten years. Accordingly, Mr. Maynard agreed to draft a bill embodying these provisions. Realizing that it would require great effort to pass a bill, and as Howard Potter, president of the Niagara Falls Association, was in Europe, Charles S. Fairchild, then chairman of the executive committee, sent for Mr. Welch to come to New York, and a conference was held there. Soon after, Mr. Fairchild was appointed assistant secretary of the treasury under the Cleveland National Administration, and he asked Mr. Welch to come to New York and take charge of the movement to pass the bill, with headquarters in Mr. Robb's office in William Street.

In the meantime protests against the bill had been going from the rural districts to the Legislature. Mr. Welch thought the matter over, and finally called a meeting of the citizens of Niagara

Falls, which resulted in a decision to conduct the work at the Falls instead of New York. Petitions were prepared, and letters written to all of the Senators and Assemblymen requesting them to furnish lists of representative men in their districts, irrespective of party. This resulted in the receipt of between four and five thousand names, and to those were mailed the petitions, with the request to get signatures and then forward direct to their respective Senators and Assemblymen and notify the secretary of the Niagara Falls Association in New York that they had been sent. The result of this effective work was that some mornings in the Legislature it took an hour or more to read the headings of these petitions that were coming in, and the sentiment in the Legislature began rapidly to change in favor of the measure. A circular letter was then prepared setting forth the well-known arguments, and addressed to about eight thousand representative men, requesting them to write to their Senators and Assemblymen, and inclosing blanks which they were to fill out and send to the secretary, advising that they had done so. This brought large response, and Mr. Welch preserved a pile of letters two feet thick of this character, which were bound, and which Mrs. Welch has presented to the Niagara Frontier Historical Society.

Mr. Welch delivered two eloquent speeches at Albany, one in favor of each of the bills. The last one before the joint committee of the Senate and Assembly when the award bill was under consideration February 26, 1885, was so eloquent, yet brief, that it is herewith subjoined:

“Mr. Chairman and Gentlemen of the Joint Committee of the Senate and Assembly:

“Although a resident of the village of Niagara Falls, I would not appear before you today were it not for the fact that during the past three years, as a member of the Assembly, I have been deeply interested in the important matter before you for consideration. In 1883, with Senator Robb, who has just addressed you, before introducing the preliminary bill providing for the appointment of a commission for the selection of lands for a State Reservation at Niagara, I waited upon Governor Cleveland to ascertain if he would be willing to appoint such commission, as we were of the opinion that such appointment would be more

desirable than to name the commissioners in the bill. Governor Cleveland said that while he did not seek the responsibility of naming the commissioners, yet if the Legislature imposed that duty upon him, he would discharge it to the best of his ability, and he added in relation to the objects sought to be accomplished, if it is to be done, it should be done quickly, as the State can now secure the necessary lands at less expense than at any time in the future. Upon the passage of the bill, Governor Cleveland promptly gave it his approval, and appointed as members of the commission, gentlemen of such standing and reputation in the State as to at once inspire public confidence in the enterprise. In 1884 Governor Cleveland signed a bill extending the time allowed for the appraisement of the lands. He called attention to the subject in his message, and he has in every way encouraged the friends of this movement. In selecting lands in accordance with the provisions of the law of 1883, the commissioners decided to appropriate Goat Island and the adjacent islands, Prospect Park and a narrow border of land along the river, thus securing all that is necessary to preserve the natural beauty of the Falls of Niagara and the great rapids above them from destruction, and open the enjoyment of them freely to the public for all time to come. The appraisers appointed to ascertain the value of the lands were of the same high character as the commissioners, and discharged their important and difficult duty with a jealous care for the interest of the State and a desire to do exact justice to all concerned. The report of the appraisers was promptly confirmed by the court, and the bill before you for consideration today provides for the payment of several awards made by them. Thus far there never has been a public enterprise conducted more strictly upon honor, than that for which we now ask for your approval. I know something of the difficulties under which you labor, having, during the last two years, served with some members I see before me upon the Ways and Means Committee of the Assembly. The constantly increasing demands of the various departments of the State give rise to anxiety, and at times it is very difficult for public officers to decide which course is best to pursue. I do not think that any of my associates will say that I have lavished extravagances in public outlay, and therefore I now ask that only such weight be given to my words as my

actions, when I occupied the place where you now are will justify. I think you will agree with me that there are some things the worth of which to humanity cannot be reckoned in gold. The Falls of Niagara is certainly one of these. Such seems to be the sentiment of the pulpit, the press, the universities, the schools, and the intelligent culture and patriotism of the people of our State. As the object of this movement has been agitated, it has steadily grown in public favor. Many who voted against the preliminary bill in 1883 now write to me saying that they regret their former action and wish they now had the opportunity of voting in favor of the bill. The chairman of the State Committee of each of the great political parties is earnestly in favor of it. I have received letters from ex-Speakers Alvord, Littlejohn, Sharon, Paterson and Sheard, expressing the desire to be of service in advancing the measure, and also from such well-known public men as Erastus Brooks, to whose eloquent words you have just listened, and who has been among the earnest advocates of this object from the outset. Poucher of Oswego, Thompson of Jefferson, Clinton of Erie, whose name is associated with greatness of our State, Boynton of Essex, chairman of the late Republican State Convention, whose reputation in the Assembly was that of a careful, intelligent legislator and a watchful economist, who says that after all, 'A legislator cannot do better than administer to the happiness and elevation of the people,' as is contemplated by this measure.

"Having lived at Niagara Falls as long as I can remember, I know of the humiliations and annoyances to which visitors are subjected, and which the passage of this bill will largely remedy. Niagara, of all places, should be the spot to which the professional, or business man, or the farmer or mechanic, could go for a day of perfect rest and enjoyment, in contemplating one of the most inspiring objects in Nature. Instead of that it is to many, owing to the surroundings, a place of absolute torment, every available spot for viewing the Falls is inclosed for private profit, and a deep-rooted system of abuses which the local authorities seem powerless to remedy has grown out of this state of affairs. The passage of this bill will, in time, remove these difficulties by bringing the power of the State to bear directly upon them, thereby restoring Niagara to its rightful place, as the most delightful resort in the world.

"I have noticed in attendance at this hearing today a large number of women. Such, I believe, has been the case in every instance when this bill has been considered in committee. Many members told me personally that their wives earnestly appealed to them to vote for this bill. I can well understand that the nature of women and their love of everything beautiful arouses within a desire for the preservation of the Falls of Niagara. I have seen thousands of women looking upon Niagara for the first time, and always with exclamation and every evidence of extreme delight. Every woman in our land seems to cherish a wish to behold the Falls of Niagara, and I hope that every member of your committee will bear in mind that they are represented here only by you and that to you it is implicitly confided to speak and vote and legislate for their happiness and welfare. I believe that you will be true to this most tender trust.

"A duty is also owing to children in this matter. They will inherit this possession and they will be grateful that we have not allowed the beauty of the Falls of Niagara to be destroyed by encroachments like those at the Falls of the Genesee. There exists a great danger of such disfigurement. I am informed that a larger sum has been offered by an eastern manufacturing company for Prospect Park than that awarded by the State appraisers, and the strip of land along the rapids has been repeatedly surveyed, with the view of making a railroad terminus. As a great water power is provided already by means of a hydraulic canal, and abundant other lands for railroad purposes can be obtained, everyone who wishes to see the beauty of the Falls at Niagara preserved should protest against the use of the surroundings of Niagara for such purposes, and if necessary, ask the power of the State to intervene and prevent.

"In answer to the chairman, I wish to say that in my opinion, the lands covered by the awards provided for in this bill are all that are necessary or ever will be necessary to preserve the scenery of the Falls of Niagara, and that the State will not be called upon at any future time to purchase additional lands for the purpose. The lands to be taken will make a beautiful and complete framework for the Falls and Rapids on the American side, and the Ontario Parliament now has under consideration a bill providing for a similar reservation on the Canadian shore. Neither will large annual appropriations of money be demanded.

Expensive artificial structures are not desired; the object is to remove them and to restore the banks of the river to their natural condition. Any member of the committee who has visited the great Whirlpool at Niagara, and stood far down at the water's edge where every human habitation is shut out from view and nothing is seen but the rushing and whirling waters, the high wooded banks, and the blue dome of the sky, can realize what is hoped for in that immediate vicinity of the Falls now disfigured by unsightly structures. Campbell's lines on another subject beautifully express our ideal of the scenery of Niagara restored to a state of nature:

'For man's neglect I love thee more
That art nor avarice intrude,
To tame thy torrent's thunder-shock
Nor prune the vintage of the rock
Magnificently rude.'

"I need not tell the members of this committee how deeply in earnest I am in this matter and how much I wish that I could impress my views upon them in a manner worthy of the object and the occasion. The success of this measure has been one of the cherished objects of my life, and if it becomes a law, I shall be proud of my connection with it as long as I live.

"I believe that in after years every member who votes for this bill will share in this feeling. The public opinion in its favor is so strong that I feel sure that if this committee reports the bill favorably, the legislature will pass it. In that event it has been stated that the Governor will veto it. I have no fear of such a result. As Governor Hill succeeded Governor Cleveland upon the election of Cleveland to the Presidency, it is but reasonable that he should carry out his favorable policy toward this measure. Governor Robinson may have been the originator of this measure, as he first called the attention of the Legislature to its object. He is the political friend and fellow-townsmen of the present executive. I do not think that Governor Hill will be unmindful of those considerations. If the bill comes before him for his approval, I believe he will now consummate the work inaugurated by his distinguished townsmen and carried forward by the present chief magistrate of our country.

"I appeal to the members of this committee to give this really great bill, the most important now before the Legislature, and

one of the most noted and worthy measures in the legislative history of our State, their favorable consideration.”

The bill was reported favorably, and passed both the Senate and Assembly. After it was sent to the executive mansion, Governor Hill accompanied by his military secretary came to Niagara Falls and was shown around the proposed reservation by the late Judge Cyrus E. Davis and Hon. Thomas V. Welch. Later Mr. Welch, Captain Benjamin Flagler, and Major James Low went to Albany and were there when Governor Hill signed the bill April 30, 1885, just two years after Governor Cleveland signed the first bill. There was a big jollification when the news of the Governor's action reached Niagara Falls.

Then began preparations for opening the reservation by the State. Pending this, Mr. Welch was put in charge of the property, without salary. General and special committees were appointed and they met every Friday. Much hard work was done and about thirty-five hundred dollars was subscribed to defray the expenses of the most elaborate public ceremonies that have ever been held in this region. Invitations were sent to prominent people all over the country to attend the opening, July 15, 1885. The list included mayors, governors, officers of the Dominion of Canada and many others. Replies were received from President Cleveland, General Grant, and a great many others of state and national fame. The general committee was officered by Colonel C. B. Gaskill, president; A. Hector Gluck, secretary; and Francis R. Delano, treasurer. The reception committee was made up of Franklin Spaulding, Sebastian Geyer, Francis R. Delano, Arthur Schoellkopf, Hans Nielson, Major S. M. N. Whitney, Hon. Thomas V. Welch, and Benjamin Rhodes.

The details of the great celebration which brought the greatest number of people ever seen here at one time, probably about seventy-five thousand, are familiar to many present residents of Niagara Falls, although a large majority of our citizenship was not here at that time. An address was delivered by Erastus Brooks, who presided. Reservation Commissioner William Dorsheimer made the presentation speech, and Governor Hill the speech of acceptance, while Hon. James C. Carter was the orator of the day. A speech was made by Lieutenant-Governor Robinson of the Province of Ontario.

On the following day the reservation commissioners met and unanimously decided upon Mr. Welch as superintendent. After some time to consider, Mr. Welch accepted this appointment and served continuously and most efficiently until the time of his death, which occurred October 20th, 1903.

Thirty years have passed and wonderful changes have taken place around the great cataracts, and all for the better. Today people from all quarters of the globe view the magnificent natural wonders here without the annoyances that existed before the imperial State of New York became proprietor and made this locality free to all mankind forever. The object sought has been gloriously attained, and to no one man is due more praise and credit than to Hon. Thomas V. Welch, who, during the remainder of his life, labored assiduously to carry out the letter and spirit of the law to which the signature of Governor Hill was attached April 30, 1885.



HONORABLE ARTHUR SCHOELLKOPF

Mr. Schoellkopf was manager of the Hydraulic Power Company for many years, and also served as Mayor of the City of Niagara Falls



PAUL A. SCHOELLKOPF

Manager of the Hydraulic Power Company and President of the Power City Bank

CHAPTER VI

THE HYDRAULIC CANAL

**Like Many Pioneer Enterprises, Day's Canal was a Financial Failure.
Then Schoellkopf Acquired it and Made it One of the
Greatest Enterprises in the Country**

THE inventors and pioneers are frequently in the same class. Other people get the chief benefits of their genius and labor. An inventor often fills a pauper's grave while his genius revolutionizes the line along which it is directed, and makes other people millionaires. It is related that Mergenthaler died poor, but his linotype revolutionized printing and is now in universal use, while the manufacturers of the marvelous machine, with its five thousand interchangeable parts, have built up a great business. This is a single instance—many more could be cited. The pioneer, whether it be by the settlement of a wilderness or by leading the way in any enterprise, blazes the path to be traveled by others in pursuit of happiness and prosperity.

Thus it was with the great hydraulic power canal development at Niagara Falls. Horace H. Day built the hydraulic canal, but never profited thereby. He commenced this great work in 1853, and completed it in 1861. Then the enterprise was dormant for many years. The canal was blasted through the rock, which is everywhere close to the surface in the vicinity of the great Niagara Gorge. It is related that Day expended \$1,000,000 in building it. His financial resources were gone, and some years later the property was sold under foreclosure, and the man who bought it was scoffed at by his acquaintances.

The power of Niagara was first utilized in 1725 by a primitive saw mill. In 1805 Augustus Porter built a saw mill and

blacksmith shop, and in 1807 a grist mill. A raceway from the upper rapids was employed. In 1826 the race or wing dam was extended, and other parties used it for various works. DeWitt Clinton, the father of the Erie Canal, and at one time governor of New York, in 1810 wrote in his journal that Niagara Falls is "the best place for hydraulic works in the world." Augustus Porter saw this, and for several years made favorable offers to capitalists. In 1842 he suggested development of power from the river on a larger scale, and, in January, 1847, with Peter Emslie, a civil engineer, published a plan. The first arrangement for development was made with Walter Bryant and ex-Mayor Caleb S. Woodhull of New York.

The canal which Horace H. Day built was thirty-five feet wide, eight feet deep, and 4,400 feet long, from the upper river to the top of the high bank of the lower river, where there is a fall of 212 feet. Years later it was demonstrated that the "mill" will "grind with the water that is passed," contrary to the old saying, for there was a mill on top of the bank and another in the gorge using the same water. The heirs of Augustus Porter gave a right-of-way one hundred feet wide through the village of Niagara Falls and more land at the terminal for the basin. Largely as the result of the construction of the hydraulic canal and the railway suspension bridge, the population of the village of Niagara Falls increased materially from 1850 to 1860. Hence, both in village days more than half a century ago, and in city days, from 1910 to 1915, Niagara Falls made the largest percentage of growth of any community in the State.

The first user of power from the hydraulic canal was Captain Charles B. Gaskill, who completed a grist mill in 1875.

Mr. Day and his associates organized the Niagara Falls Hydraulic Company on March 22, 1853, and the work was actually commenced on April 20 of that year. Following the completion of the canal in 1861, the enterprise languished, notwithstanding the undoubted opportunities for manufacturing by means of cheap power that the hydraulic canal afforded, and it was about fifteen years later that any use whatever was made of this power development. The capital originally invested proved to be a total loss.

In Niagara Falls today we speak of horse-power as they speak of millions of money in New York City which, as the result of

the European war, has become the financial center of the world. Niagara Falls is the hydro-electrical power center of the world, and there is actually developed from the Niagara River over 600,000 hydro-electrical horse-power. What we mean when we speak of horse-power is the power that must be exerted in lifting 33,000 pounds at the rate of one foot per minute. On the same basis, one horse-power would lift 550 pounds at the rate of one foot per second.

The hydraulic canal property was purchased by Jacob F. Schoellkopf of Buffalo in 1877, and three generations of the Schoellkopf family have been in its control and management ever since. Mr. Schoellkopf was himself a striking illustration of the possibilities of American life. He was a German emigrant with no property when he came to America. He first worked for wages, but soon established and built up various lines of business, giving employment to many people, and finally became a millionaire. His farsightedness, energy and constructive genius changed the hydraulic canal property from failure to success. Of course it had to be improved and expanded. Mr. Schoellkopf and his associates built a flour-mill on the canal basin, still known as the Schoellkopf & Matthews mill. In 1885 there was 10,000 horse-power available from the hydraulic canal. Upon acquiring this property, Jacob F. Schoellkopf sent his son, Arthur Schoellkopf, at the age of twenty-one, to Niagara Falls to manage the property. Arthur Schoellkopf subsequently became Mayor of the city of Niagara Falls, and since his untimely death, in 1913, his son, Paul A. Schoellkopf, has had charge of what in recent years have become known as the Schoellkopf interests at Niagara Falls, which include in addition to the hydraulic canal and associated companies, a big financial institution, the Power City Bank, of which Mr. Paul A. Schoellkopf is President.

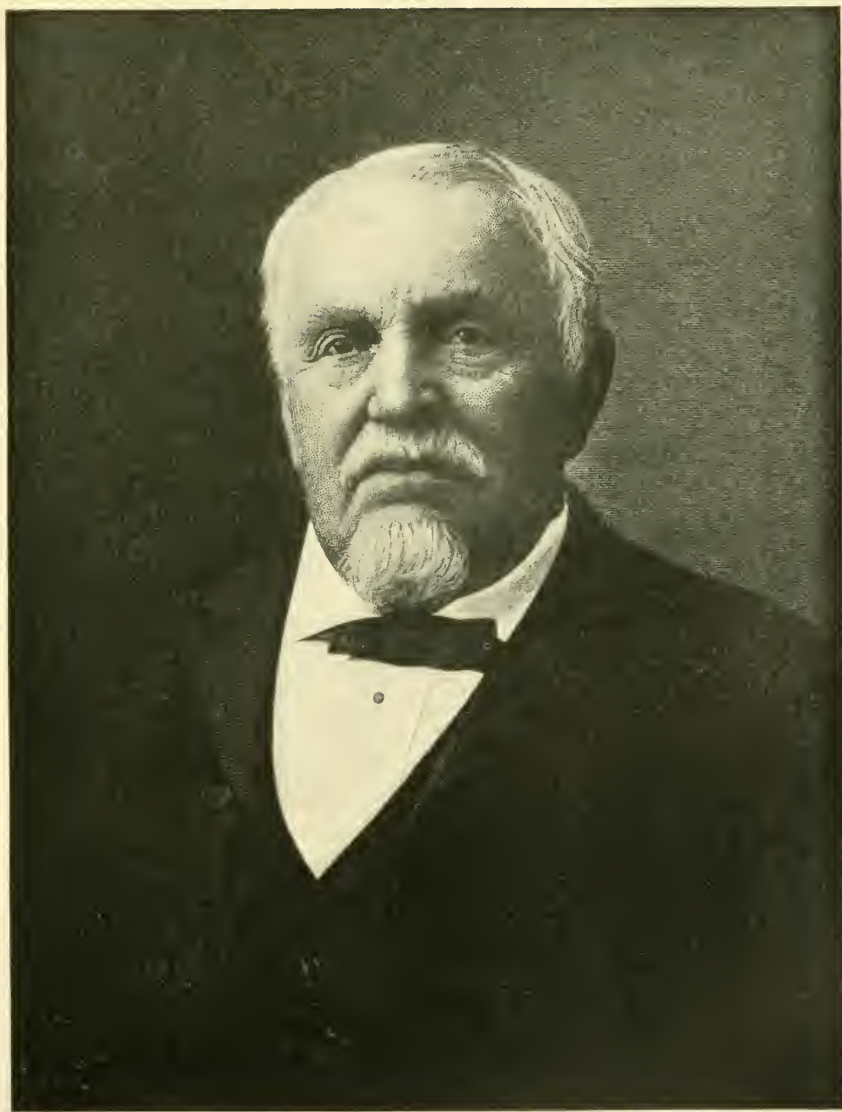
Jacob F. Schoellkopf was a native of Krichheim, Germany, where he was born in 1819. He lived eighty years, and many years before the close of his long life he had become one of the leading business men of America, having built houses, stores, shops, tanneries, mills, and highways, and managed banks, besides bringing to fruition the great power development enterprise at Niagara Falls. Mr. Schoellkopf came to America when he was twenty-two years old and located in Buffalo in 1844. It was in 1877 that he bought the so-called Day canal, and in

1878 he organized the Niagara Falls Hydraulic Power and Manufacturing Company. The title was afterwards shortened to the Hydraulic Power Company.

Of course, a large sum of money has been expended in widening the canal to one hundred feet and deepening it to fourteen feet according to the original grant. In 1896 the New York Legislature enacted a law confirming the riparian rights of the company, but limiting them to the diversion of an amount of water that could be drawn through its canal one hundred feet wide and fourteen feet deep.

The Schoellkopf & Matthews flour mill that was built to utilize some of the power of the hydraulic canal, was equipped with 900 horse-power secured from big wooden wheels, which soon were replaced with iron. The head then was fifty feet. These wheels were nine feet in diameter, being placed at the bottom of iron flumes which were the first iron penstocks used at Niagara Falls. It was soon apparent that the greater the head, the greater the power, and another flour mill was erected, using a head of eighty-six feet. In 1881 the Power Company installed dynamos, and electricity was furnished to some manufacturing concerns and for village lighting. The first illumination of Niagara Falls, at night, took place at about this time. This was the first use of electric power here, and the first wheels that were put in were smashed by the force of the water. It took much experimenting to get apparatus strong enough to withstand the pressure. The turbines were placed in pits excavated from twenty-two to ninety feet down the cliff.

It was in 1895 that the predecessor of the Hydraulic Power Company began its modern and extensive electrical power development. Power station No. 2 was built at the water's edge in the gorge and utilized the greater head. This generating plant has now practically been superseded by power station No 3, architecturally and otherwise one of the finest in the world. Within its walls there are thirteen generators of tenant companies, of 10,000 horse-power capacity each, to which the Hydraulic Power Company delivers mechanical power. The water from the surface canal flows through gateways into steel penstocks through which it falls 212 feet upon the wheels. The generators make 300 revolutions per minute. This power station is 500 feet long, and the hydraulic efficiency from headwater to



JACOB F. SCHOELLKOPF
Founder of the Hydraulic Power Company of Niagara Falls, N. Y.

tailwater is ninety per cent, while an electrical efficiency of ninety-five per cent is obtained by its major tenant company.

The Hydraulic Power Company has passed through all the stages of development from low head grist mills and paper mills, culminating in the highest hydro-electric efficiency as found in its power station No. 3. The company sells its mechanical power to the Aluminum Company of America and to the Cliff Electrical Distributing Company, which latter concern is owned by the Schoellkopf interests. None of this company's power is sold outside of the city of Niagara Falls, and none of it is used outside of the city. The water wheels in its power plant were built by the I. P. Morris Company of Philadelphia, and the generators by the Allis-Chalmers Company, except those used by the Aluminum Company of America, which were built by the General Electric Company. The horizontal type of water wheel is employed, in contradistinction to the vertical type. As the water from the upper river is carried through a surface canal to the edge of the cliff with a loss of less than two feet in the head, and then to the water's edge in the gorge, the employment of the horizontal type of wheels with their inherent advantages is permitted. The water from the canal is led from the canal to the penstocks around long curves, and the velocity is changed slowly with little loss of efficiency.

At the gate-house overlooking the gorge, the water passes under steel booms which exclude floating drift or ice, into a housed and heated screen chamber, where it goes through racks which intercept any trash carried by the stream. Then the water enters the penstocks, which are circular steel tubes leading down over the cliff to the turbines on the floor of the power house, twenty-three feet above the ordinary level of the river in the gorge. After passing through the horizontal turbines and delivering ninety per cent of its energy to them, the water is led by draft tubes to the river. Between the discharge of the draft tubes and the river surface a concrete wier is set, whose purpose is to keep the tube always submerged and effective in low stages of the river.

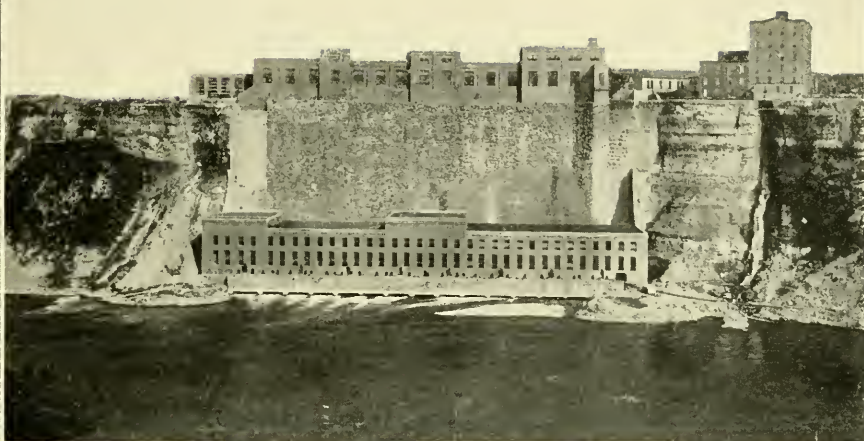
To the turbine shafts are connected electric generators of the tenant or allied companies which are supplied with mechanical power by the Hydraulic Power Company. More than half of the total energy developed by this company is employed in

its ultimate capacity within a quarter of a mile of the turbine shaft which evolves it. Most of its power is used in electro-metallurgical and electro-chemical manufacturing processes, but a portion is used in the manufacture of paper and other articles.

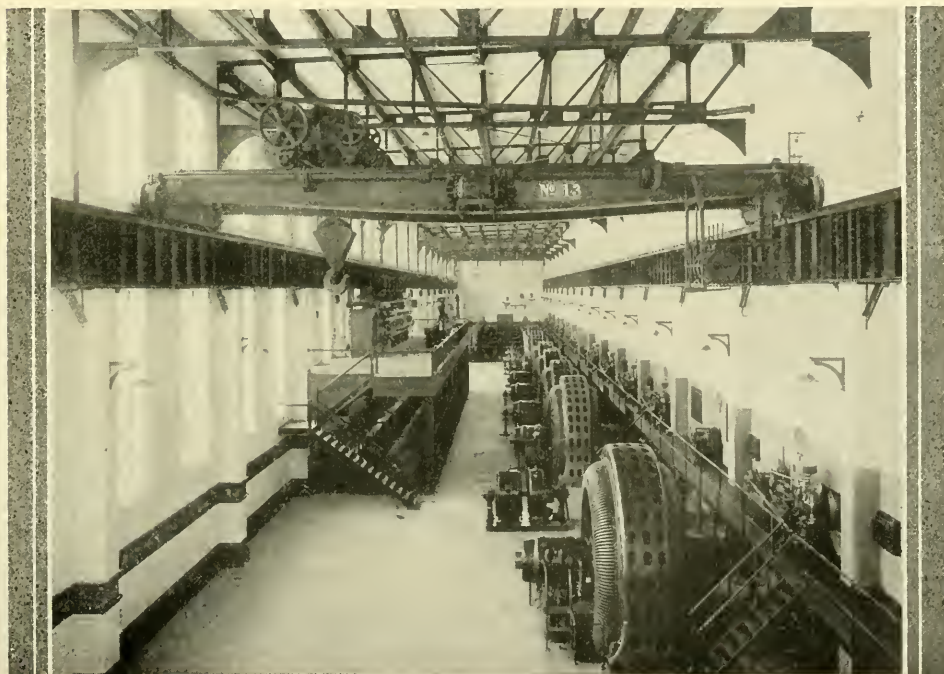
Only a little of the water is used for industrial purposes direct without conversion into the energy of motion or electricity. In the early days of water power development at Niagara Falls, turbine wheels operated with some risk of flying to pieces on heads exceeding seventy to eighty feet, and the cliff developments were then under relatively low heads. Since 1906 all but 263 cubic feet per second out of more than 1,000 cubic feet so used has been reclaimed by the Hydraulic Power Company for use with the full practicable head of 212 feet.

The office building and other structures of the Hydraulic Power Company recently erected have been constructed of rubble masonry, a type developed entirely for scenic effect, although, of course, also very substantial. On the face of the cliff a gigantic rubble masonry wall, over 200 feet high, has been constructed, covering the penstocks that lead to the power house below. The expense of this work was more than \$100,000. In some instances it is impossible for the naked eye to detect the difference between the artificial and the natural formation. This stupendous piece of masonry was constructed after the so-called Taft Scenic Commission, a committee of men named by William H. Taft when he was Secretary of War, had recommended the beautifying of the cliff. Chief Engineer John L. Harper of the Hydraulic Power Company, who designed and supervised the work, won a signal triumph in engineering, because the Taft Commission testified that its recommendation had more than been fulfilled.

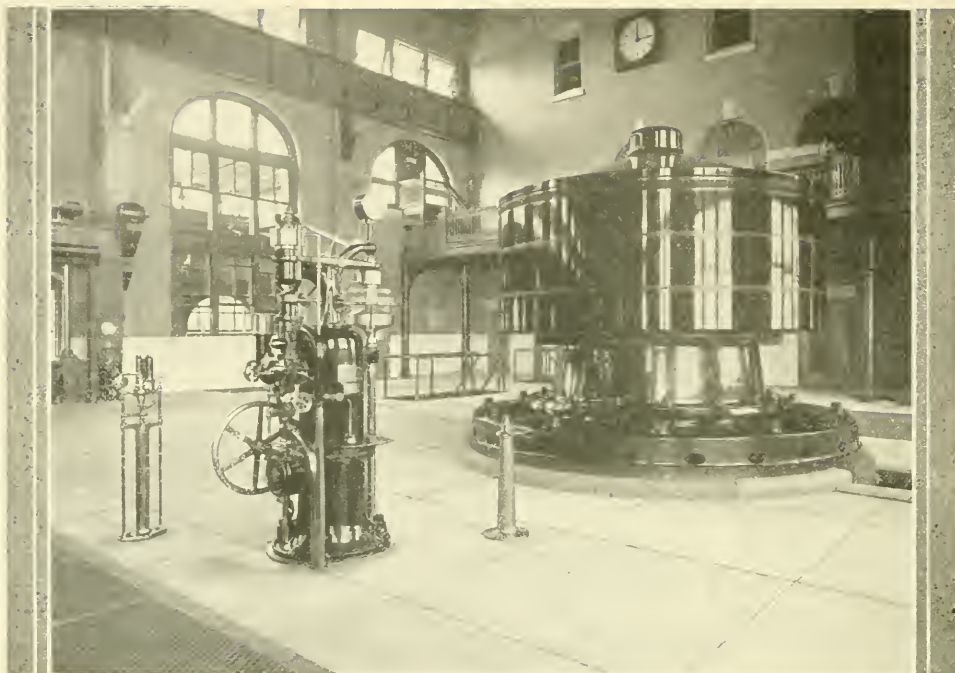
The so-called hydraulic canal basin, where the pioneer power user was the Gaskill flour mill, is now covered with important manufacturing establishments and the buildings used by the power company. There is a boulevard through it and decorative lighting at night, and the power company's property there has been beautified generally. On the river side of power station No. 3 there is an upper and lower promenade with potted plants the whole length of each of them, and shrubbery has been planted on the slope of the river bank. In fact, it is authoritatively stated that the company expended for these improvements and the



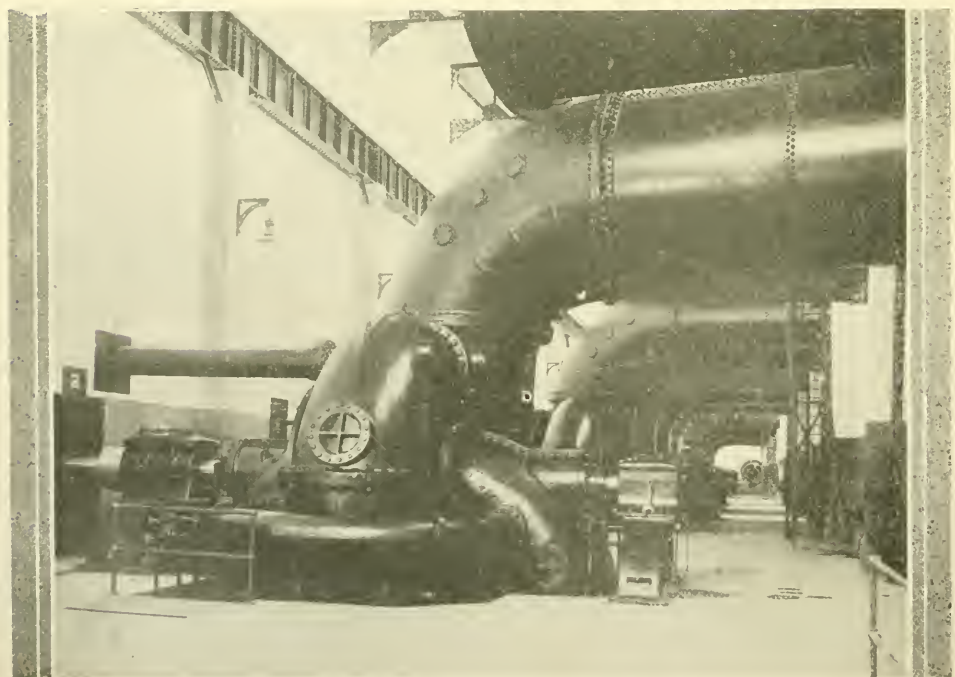
VIEW OF POWER STATION, GATE HOUSE AND OFFICE OF THE HYDRAULIC POWER COMPANY
Taken from Canadian side of River



VIEW OF GENERATOR ROOM IN STATION OWNED BY HYDRAULIC POWER COMPANY
OF NIAGARA FALLS, N. Y.



ONE 5,000 HORSE-POWER GENFRATOR AND GOVERNOR IN POWER HOUSE No. 2 OF THE
NIAGARA FALLS POWER COMPANY



VIEW OF WATER WHEEL ROOM OF THE HYDRAULIC COMPANY AT NIAGARA FALLS, N. Y.
Contains 13 units of 10,000 horse-power each

great rubble masonry wall, a total of over \$155,000. The Hydraulic Power Company owns the high bank from a short distance below the upper steel arch bridge to about a mile below, and its plan, now well begun, is to make this water front one of the most beautiful spots to be seen in any country. Visitors are welcome to the power plant and are escorted through it.

As the lands above the canal basin came to be fully occupied, the company several years ago purchased one hundred acres of land in the northern part of the city and there established a second industrial district. Several large manufacturing plants are now located there which use electric power from the hydraulic canal. All facilities are provided, such as pavement, sewers, water mains, steam railroad siding, and electric railroad transportation.

The courage of the pioneer, Day, and the combined courage and genius of the German emigrant, Schoellkopf, have made all these things possible.

Right here it is interesting to note a new illustration of the potentiality of the Falls of Niagara. It is made by Francis C. Shenehon, principal assistant engineer of the United States Government, and dean of engineering of the University of Minnesota at Minneapolis, who has devoted much time and study to the subject, and who has made an elaborate official report to the National Government, which is published as a Senate document. Mr. Shenehon says:

“A volume of 210,000 cubic feet per second, with a descent between the ‘dead line’ and the upper gorge of 220 feet, has a potential of over 5,000,000 horse-power. This is the power of 15,000,000 strong draft horses each limited to an eight-hour day. If it takes ten able-bodied men to do the work of one of these draft horses, the work potential in this fall is that of 150,000,000 men, nearly twice our population of men, women and children. The great companies at the Falls have created, in good faith, power plants to lessen the hardships of human labor, to aid transportation, to illuminate the night hours and to add to the wealth of two nations.”

CHAPTER VII

BEGINNING OF ELECTRICAL DEVELOPMENT

Charter for The Niagara Falls Power Company Passed Through the
Legislature by Assemblyman Peter A. Porter of Niagara Falls.
First Sod for Tunnel Turned Oct. 4, 1890

THE beginning of the project of the electrical development of power at Niagara Falls was the passage by the New York Legislature of a special charter drawn by Hon. W. Caryl Ely, and introduced by Assemblyman Peter A. Porter of Niagara Falls, a descendant of the family that long owned Goat Island and much property immediately adjoining the Falls on the mainland, on March 31st, 1886, granting to The Niagara Falls Power Company the right to develop 120,000 horse-power from a tunnel. The projectors were Colonel Charles B. Gaskill, the first user of water-power from the hydraulic canal, and seven others. It was estimated that 120,000 horse-power exceeds the theoretical power at Lawrence, Holyoke, Lowell, Turners Falls, Manchester, Windsor Locks, Bellows Falls and Cohoes, and exceeds the power actually developed at these places and at Augusta, Paterson and Minneapolis. The work of excavating for the tunnel was started October 4, 1890, by the Cataract Construction Company, an auxiliary of the Power Company. The tunnel was constructed by Rodgers and Clement, and the wheelpit by Anthony C. Douglass, afterwards mayor of the city for four years. The intake canal, one and one-quarter miles above the Falls, is 250 feet wide, twelve feet deep, and 1,200 feet long. The wheelpit is 178 feet deep. The tunnel is 7,481 feet long, and the interior dimensions twenty-one feet by eighteen feet, six inches. It runs about 200 feet below the city of Niagara Falls, the slope being six feet in one thousand. In excavating

for it, 300,000 tons of rock were taken out; for lining it, 16,000,000 bricks were used. The initial installation was for 15,000 horse-power. Its generators are of 5,000 and 5,500 horse-power in its two power stations at Niagara Falls, New York, and 10,000 and 12,500 horse-power at the plant of its allied company, the Canadian Niagara Power Company, at Niagara Falls, Ontario.

On August 26, 1895, Niagara electric power was first delivered, commercially, by The Niagara Falls Power Company, the first customer being the Pittsburg Reduction Company, which has since changed its name to the Aluminum Company of America, and now has three great plants at Niagara Falls, using about 75,000 electrical horse-power, this company being undoubtedly the largest power user in the world. There are only twelve aluminum-making concerns in the world. This company also has a plant at Shawinigan Falls and Massena Springs on the St. Lawrence River, and it is by long odds the largest producer of aluminum. It employs over one thousand men at Niagara Falls. This great industry was made possible by the electrical harnessing of the Falls at Niagara.

The first plan for the electrical development of power at Niagara Falls was made by Thomas Evershed, State engineer of New York, who laid out the State Reservation at Niagara, the property which the State acquired in the vicinity of the Falls; removed objectionable structures upon and restored to natural conditions, and who, many years before, had done there work for the State Geological Survey. It took three years to interest capital in The Niagara Falls Power Company development. This great work was done chiefly by William B. Rankine, a young Niagara Falls lawyer, who went to New York and interested great financiers like J. Pierpont Morgan, John Jacob Astor, Francis Lynde Stetson, Hamilton McK. Twombly, Edward A. Wickes, Morris K. Jessup, Darius Ogden Mills, Edward D. Adams, Charles F. Clark, Charles Lanier, A. J. Forbes-Leith, Walter Howe, John Crosby Brown, Frederick W. Whitridge, William K. Vanderbilt, George S. Bowdoin, Joseph Larocque, of New York, and Charles A. Sweet of Buffalo. Mr. Rankine was the first secretary of the Company, and later vice-president, dying an untimely death in 1905, but not until the great project which he promoted was in successful operation.

The power-producing capacity of the great cataracts is

estimated by the most eminent engineers at from five million to seven million horse-power. The diversity in the figures is explained by the difference in the flow of the river caused at various times by the direction and velocity of the wind, or an occasional ice jam in winter. Aside from these elements and the seven-year cycle in which all waters are said to move, there being high and low water periods, there is no perceptible difference in the flow of the river. The average flow of the river is 222,400 cubic feet per second. A flow of one cubic foot per second equals one square mile of water 1.16 inches deep in a thirty-day month. The flow of the Niagara River is furnished by six thousand cubic miles of water from four lakes, having ninety thousand square miles of reservoir space. The drainage area that feeds the Niagara River covers 255,000 square miles, of which 59.4 per cent lies on the American side of the boundary line. The annual rain and snow that falls over this watershed amounts to nearly thirty-one inches of water. The extreme width of the river is one mile, and the two channels above the Falls are 3,800 feet wide. The American Falls is 165 feet high and 1,000 feet wide, and the Horseshoe Falls is 159 feet high and 2,600 feet in width. The greatest depth of the river just below the Falls is 192 feet. The flow of water over the Falls of Niagara is about 25,000,000 tons an hour, or one cubic mile per week.

To show the fluctuation in the flow of the Niagara River, the result of various tests that have been made during a period of more than fifty years may be cited. Inasmuch as the electrical development of power was commenced about twenty years ago, it will be seen that many of these tests were previous to that period. Joseph William Winthrop Spencer, M.A., Ph.D., F. G. S., an eminent authority on this subject, has given the figures and dates in a comprehensive publication which he issued for the Canadian Government. On October 7, 1853, the flow was 314,000 cubic feet per second, or 7,562,000 horse-power. In the month of June, 1862, the flow was 260,000 cubic foot seconds, or 6,264,000 horse-power. The average flow for the year 1862 was 242,000 cubic foot seconds, or 5,854,000 horse-power. For the entire period, from 1860 to 1890, the average flow was 226,000 cubic foot seconds, or 5,444,000 horse-power. From 1860 to 1905 it was 205,000 cubic foot seconds, or 4,915,000 horse-power. On February 28, 1902, there was an ice jam, and the flow of the

river that day was only 158,500 cubic foot seconds, or 3,818,000 horse-power, while for the whole month of February that year the average flow was 175,000 cubic foot seconds, or 4,216,000 horse-power.

In this connection, it can be stated that each cubic foot of water per second has in it potential energy amounting to twenty-three horse-power. Each cubic foot of water weighs sixty-two and one half pounds.

It is estimated that 100 horse-power steam power costs \$4,000 per year for ten hours per day. At Niagara Falls 100 horse-power electrical power costs \$2,000 per year, twenty-four hours per day. With electrical power, each machine may be driven by an independent motor, without belt or gearing. The volt is the unit of electrical pressure. The ampere is the unit of electrical current. A volt multiplied by an ampere equals a watt. The watt is the unit of electrical power. One thousand watts equals one kilowatt. Seven hundred forty-six watts equal one horse-power.

The descent of the Niagara River, from lake to lake, is 336 feet, of which 216 feet is in the rapids above the Falls and in the Falls themselves, distributed as follows:

	Ft.
From Lake Erie to the commencement of the Rapids (21 1-2 miles),	15
In the half mile above the Falls	55
In the Falls themselves	161
From the Falls to Lewiston (7 miles)	98
From Lewiston to Lake Ontario (7 miles)	7
Total	336

Depth of pool from foot of Horseshoe Falls to two miles below, 100 to 200 feet.

In Whirlpool Rapids, depth averages 50 feet; current, 30 miles per hour.

Depth 200 to 300 yards above cantilever bridge, 186 feet.

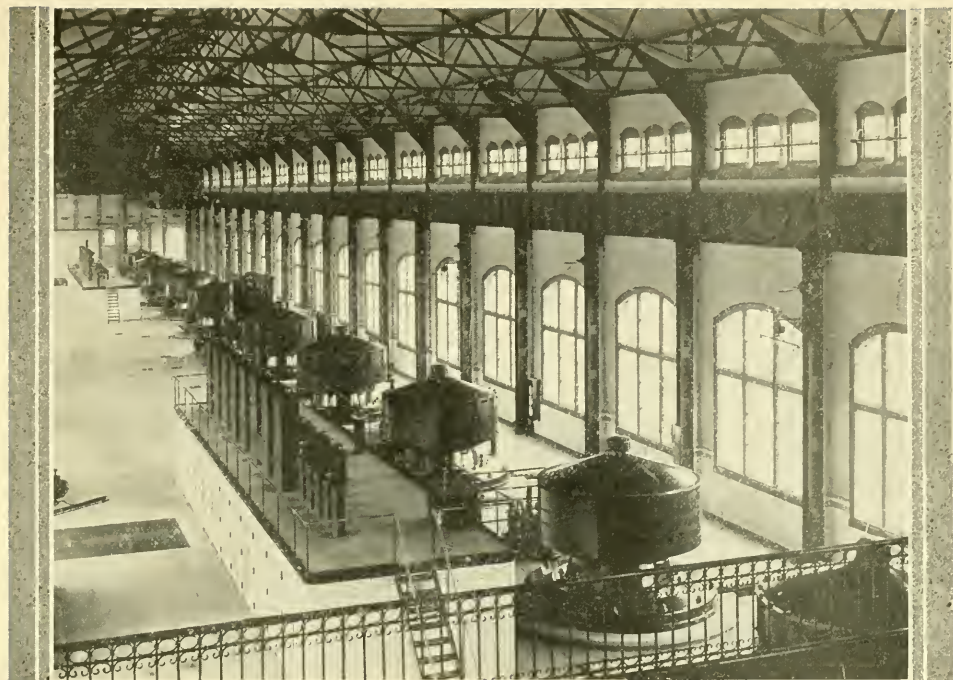
Depth under cantilever bridge, 85 feet.

It is estimated that there is now invested about sixty million of dollars in power development at Niagara Falls. It is estimated that the entire cost of the Catskill Mountain water supply project for New York City will be \$161,800,000. The original estimate of cost for the construction of the Panama Canal has

been nearly trebled and the cost finally reached something like \$400,000,000. This piece of work runs into far more money, but it does not involve the intricate detail of either of the other projects. The Panama Canal is simply a gigantic excavation with the construction of ponderous locks and a dam. Were it not for the slides, no wonderful skill would be required. The Catskill reservoir and aqueduct are far more involved propositions. The conveying of the aqueduct under the Hudson River at Storm King and Breakneck was a wonderful piece of engineering. In order to strike the right kind of rock, the great tube was bored from 1,000 to 1,400 feet under the river and up on the opposite side, thus creating a great siphon, the force of the water starting 610 feet above the level of the sea in the Ashokan reservoir being sufficient to carry it up a steep grade. As a matter of fact, the force of the water will be so great that no pipe would hold it, and it is necessary to lead it through the solid rock. Sometimes the aqueduct is near the surface, and again it is 400 feet below the surface, this deep excavation being made to reach the right kind of rock. If the aqueduct were level, a railroad train could run through it and have plenty of room all around it. Still there were precedents for most of the work done on the water supply project.

For the Niagara Falls electrical power development there were no precedents. It was an experiment. It required lots of money, like the others, and it also required boundless courage and infinite skill. For the material advancement of mankind, it meant more than either of the others. Water is a requirement of human life, of course, and the Panama Canal will aid our commerce and our prestige upon the high seas, but the subtle current that is created from the flow of the peerless Niagara has revolutionized living conditions, and its products today enter into nearly every manufacturing industry. It has built an industrial center on the site of a summer resort in twenty years, and its impulse is felt from ocean to ocean and across the seas as well. It marked the trail for many similar undertakings, none of which can equal it in magnitude.

The power development at Niagara Falls has been of untold value to the nation. It is the biggest thing in the electrical world, and it was the forerunner of all other undertakings of its kind. The brains and the capital that did it blazed the way for



INTERIOR OF POWER HOUSE No. 1 OF THE NIAGARA FALLS POWER COMPANY



EXTERIOR OF THE POWER HOUSE OF THE CANADIAN NIAGARA POWER COMPANY



EXTERIOR OF POWER HOUSE No. 2 OF THE NIAGARA FALLS POWER COMPANY



VIEW OF FOYER OF POWER HOUSE No. 2 OF THE NIAGARA FALLS POWER COMPANY

all similar undertakings. The resultant benefits to mankind can hardly be fully recited. It has been well stated that the effect of the great electrical development has been to lessen the hardships of human labor, to aid transportation, to illuminate the night hours, and to add to the wealth of two nations. It is also stated in the government report that: "The power houses, for the most part, are architecturally excellent, harmonizing with the scenic surroundings, and the mechanical wonders wrought in solving the engineering problems of the utilization of this great head and volume of water rival as a spectacle the scenic grandeur of the Falls, and add to the attractiveness of the region."

Mr. Evershed announced his first formal plan and estimate for the electrical development of Niagara power on July 1, 1886. The discussion that followed was intended to show that the plan was impracticable. Much was also said to the effect that there would be little demand for the power if developed. The electric furnace, a great consumer of electricity, was then unknown. Over three years later, August 8, 1889, the *Nation* published an article whose purpose was to demonstrate that the Evershed tunnel was not practicable, and that if built the venture would not be profitable. Six years later electric power was delivered from that tunnel by Westinghouse apparatus, although George Westinghouse had pooh-poohed the idea five years before. The New York Legislature not only granted the charter for the present 120,000 horse-power tunnel, but the further right to construct another tunnel of 100,000 horse-power capacity. On account of federal restrictions, the second tunnel has never been constructed. The Niagara Falls Power Company, by its auxiliary, the Canadian-Niagara Power Company, originally planned to develop 250,000 horse-power on the other side of the river. It is pointed out that the United States census of 1880 showed that there was then in use in this country a total of 1,225,379 horse-power from water wheels, and that, therefore, the development planned by The Niagara Falls Power Company equaled more than a third of the power in the entire country. Should the power be developed, the next question was as to its availability, and the accessibility of its location, and it was then shown that Niagara Falls is within a night's ride of New York, Boston, Philadelphia, Washington, Pittsburg, Cincinnati, Cleveland, Chicago and other centers of the United States, and within two

or three hours of Toronto, and a night's ride from Montreal, in Canada; that Niagara Falls is a natural port of the Great Lakes and situated in the midst of a fruitful country. In whatever sense the word "fruitful" was then used, it is a fact now that Niagara County is one of the greatest fruit-growing regions in the United States. By the census of 1900, there were more than one million apple trees in Niagara County, and peaches, pears, plums and berries are most abundant.

At the time that the electrical power development at Niagara Falls was instituted, coal for the production of steam could be purchased for \$1.50 per ton. We are near the Pittsburg coal district. Electric power must, therefore be cheap. There was no thought then that one industrial concern would want 75,000 horse-power and another 60,000 horse-power. In other words, it was not foreseen that two companies would be using 135,000 horse-power.

Francis Lynde Stetson, a director of The Niagara Falls Power Company, relates that he was in England in 1890, and was told by an eminent gentleman that it was useless to talk about water-power, because steam power could be produced from coal at a cost of a farthing an hour. Mr. Stetson answered: "Very well, let us work out the problem. Coal, at a farthing an hour, would, in America, represent five cents for a day of ten hours, or twelve cents for a day of twenty-four hours, which is, for three hundred days in a year, fifteen dollars for the short day, and thirty-six dollars for the long day for fuel only. At Niagara we will gladly furnish continuous twenty-four-hour water-power for fifteen dollars per year, in any considerable quantity." After much investigation, the officers of the Power Company determined that twenty-four-hour steam horse-power is not produced anywhere in the world for less than twenty-four dollars per year, and that in the production of steam power the cost of the fuel does not represent more than one-half of the total cost.

When it came to the adoption of a general plan, Dr. Coleman Sellers, of Philadelphia, was retained by the Power Company as consulting engineer, and Clemens Herschel as hydraulic engineer. Minor modifications of Mr. Evershed's plan were made.

To get the latest information in regard to turbines and also about power transmission, Edward D. Adams, president of the

company, established in London in June, 1890, an International Niagara Commission with power to award twenty-two thousand dollars in prizes. The Commission was made up of Sir William Thomson, afterwards Lord Kelvin, as chairman; Dr. Coleman Sellers of Philadelphia; Lieutenant-Colonel Theodore Turrettini, of Geneva, Switzerland, and Professor E. Mascart of the College of France. The Secretary of the Commission was Professor Cawthorne Unwin, Dean of the Central Institute of the Guilds of the city of London. Investigation was then made in England, Switzerland, France and Italy, and twenty competitive plans were submitted to the Commission prior to January 1, 1891. The result of the competition was the selection of Messrs. Feasch and Piccard of Geneva as designers of the turbines. They were of the Fourneyron inverted twin type and were manufactured by the I. P. Morris Company of Philadelphia, Pa. These turbines have been replaced with Francis single-type turbines of the inward flow type, designed by C. C. Egbert, mechanical engineer of the Power Company, and manufactured by the Bethlehem Steel Company of South Bethlehem, Pennsylvania. The original turbines were not provided with draft tubes. Those now in use are equipped with single, central draft tubes. The turbines in Power House No. 2 are of the Francis type with single runners, but with double draft tubes. They were designed by Escher Wyss & Company of Zurich, Switzerland, and were built and installed by the I. P. Morris Company of Philadelphia. At the Canadian plant, turbines Nos. 1 to 5 are of the Francis double runner inward discharge type with double draft tubes, also designed by Escher Wyss & Company by whom turbines Nos. 1 to 3 were manufactured and installed. Turbines Nos. 4 and 5 were manufactured and installed by the I. P. Morris Company. Turbines Nos. 6 and 7 are of the Francis double inward discharge type, designed by Mr. Egbert and manufactured by the Bethlehem Steel Company. They are equipped with a third draft tube, centrally located, to take the discharge from the lower runner. Turbines 8, 9 and 10 are of the Francis type with single runners, designed by Mr. Egbert and manufactured by the Wellman-Seaver-Morgan Company of Cleveland, Ohio.

The flow of water at the turbine wheels is controlled automatically by governors which maintain a constant speed at the electric generators no matter what change occurs in the load.

Earlier types of governors installed in the American Power House No. 1 have been superseded by oil pressure governors which are now in use throughout the three power houses of the American and the Canadian companies. These governors were designed by Escher Wyss & Company, by whom the governors in American Power House No. 1 and in the Canadian Power House were manufactured. The governors in Power House No. 2 were manufactured by Falkenau-Sinclair Machine Company, of Philadelphia, Pa.

The ten generators in Power House No. 1 are of the external revolving field type, and were designed and manufactured by the Westinghouse Electric & Manufacturing Company of Pittsburg, Pa. The eleven generators in Power House No. 2 were designed and manufactured by the General Electric Company of Schenectady, N. Y. The first six generators in Power House No. 2 are similar in design to those in Power House No. 1. The other five have internal revolving fields. Of the ten generators in the Canadian plant, five were designed and built by the General Electric Company of Schenectady, N. Y., and five by the Canadian Westinghouse Company of Hamilton, Ontario. All have internal revolving fields.

The aggregate weight of the revolving parts of each turbine and electric generator, together with the sections of hollow and solid shafting connecting the two, amounts to from 150,000 to 268,000 pounds. In American Power House No. 1 this entire weight is supported by a combination oil pressure and roller thrust bearing. In Power House No. 2 and in the Canadian plant the revolving mass is for the most part counterbalanced by the hydrostatic upward pressure of water in a compartment of the turbine wheel case acting upon the lower surface of a disc secured to the shaft. In addition to this balance piston an oil pressure thrust bearing is placed in each vertical shaft just below the power house floor. This thrust bearing consists of two discs, the lower one stationary and the upper one attached to the revolving shaft. Between these two discs oil is forced under heavy pressure, the weight of the shaft and revolving parts being carried by the film of oil between the two discs.

Two main switchboards are installed in Power House No. 1, each controlling and distributing the output of five generators. The main generator and feeder switches are operated pneu-

matically, and were designed and built by the Westinghouse Electric & Manufacturing Company. In the case of Power House No. 2 and of the Canadian Power House, the entire output of each plant is controlled and distributed from a single operating switchboard through groups of electro-magnetically operated oil-break generator and feeder switches. The switchboard appliances in these two plants were designed by the General Electric Company under specifications of the Power Company's engineers.

On the Power Company's lands adjoining the power house on the American side of the river are located some thirty industries, utilizing over 106,000 horse-power for manufacturing purposes. Except in the case of the more distant plants, the power for these industries is distributed at generator voltage, namely, 2,200 volts, two-phase. For the more distant plants, the voltage is stepped up in transformers from 2,200 volts, two-phase, to 11,000 volts, three-phase. The local distributing plant consists of a subway 2,155 feet long, with a horseshoe-shaped cross section 3.83 feet by 5.5 feet and of 1,031,000 duct feet of conduit composed of vitrified tile ducts. Approximately ninety per cent of these ducts are three and one-half inches in diameter and the remainder four inches in diameter. The conduits contain about 550,000 feet of lead sheath copper cable. Approximately one-half of this cable is 3-0, three-conductor, and insulated for operation at 11,000 volts. The remainder consists principally of 1,000,000 and 1,250,000 cm cable insulated for operation at 2,200 volts. On the Canadian side of the river the local distributing plant consists of one three-phase, 2,200-volt and one three-phase, 11,000-volt overhead circuit having an aggregate length of about ten miles.

For long-distance transmission, the electrical power delivered by the generators is stepped up to a higher voltage in order to decrease as much as possible the transmission losses and the cost of transmission lines. This is done by means of transformers located in transformer stations near the different power houses. The step-up transformer plant on the American side of the river contains twenty air-blast transformers of 1,250 horse-power each, built by the General Electric Company, which change the generated current from 2,200-volt, two-phase, to 22,000-volt, three-phase, and fourteen oil insulated, water-

cooled transformers of 2,500 horse-power each, built by the Westinghouse Electric and Manufacturing Company, which transform the generated current into three-phase current at either 11,000 volts or 22,000 volts, as may be required. On the Canadian side of the river, the step-up transformer plant, located on the bluff above the Power House, contains fifteen 1,675 horse-power transformers built by the General Electric Company, and six 5,850 horse-power transformers built by the Canadian Westinghouse Company, which change the generated current from 11,000 volts, three-phase, to either 22,000, 33,000, 38,500 or 57,300 volts, three-phase, by slight changes in the connections.

From the step-up transformer plant overhead, circuits distribute the electrical power at 22,000 volts to Buffalo, the Tonawandas, Lockport, Olcott and Fort Erie. At various central points, substations are located, in which step-down transformers, converters, etc., are installed, and from which the power is again distributed in convenient form for the local customers. From the American step-up transformer station, the long distance distributing plant to Buffalo comprises two separate and distinct pole lines, 19.5 and 22.5 miles long, carrying four tri-phase transmission circuits. Two circuits consist of copper cable 350,000 circular mils in cross section, approximately 0.7 inch in diameter; the other two circuits are of aluminum cable having a cross section of 500,000 circular mils and a diameter of approximately 0.8 inch. On the Canadian side of the river there are two pole lines carrying four tri-phase 22,000 volt transmission circuits. The poles on this line are steel of special construction designed by the Power Company's engineers. The conductors are aluminum cables 500,000 circular mils in section and having thirty-seven strands. The transmission lines on both sides of the river can be interconnected at the Buffalo end, making almost impossible any serious interruption to the Buffalo service.

The Niagara Falls Power Company owns about two miles of continuous river frontage on the Niagara River and about 1,100 acres of land in the city of Niagara Falls, and in the town of Niagara, all of which is reserved for manufacturing purposes. A terminal railway runs through the lands belonging to the Power Company and directly connects each factory by means of sidings with all the great east and west trunk lines centering

at Buffalo. Connection can also be made by water with the Great Lakes and with the Erie Canal.

On the Canadian side of the river, the Canadian Niagara Power Company owns similar manufacturing sites conveniently located near the Grand Trunk and Michigan Central Railways.

In the matter of the transmission of power for considerable distances, Mr. Stetson made a tour in 1890 accompanied by John Bogart, another former State engineer of New York, and they observed five instances of the transmission of power by manila or wire ropes at Schaffhausen, Winterthur, Zurich and Fribourg in Switzerland, and at Bellegrade, France. Later hydraulic transmission was observed in Switzerland and pneumatic transmission in Paris, which, among other things, operated over thirty thousand clocks. The electrical transmission of power was found in operation in Oyannax, Domene and Paris in France and in the buildings of the Oerkiken Company, near Zurich, Switzerland. This was the foundation for the system adopted by The Niagara Falls Power Company.

It is interesting to note that, while the greatest quantity of electrical energy is generated at Niagara Falls, this is the pioneer development, and that there are several long transmission lines in this vicinity; nevertheless, the first great harnessing of the waters of the Niagara River has been followed by other smaller hydro-electric works, and the construction of transmission lines in other parts of the country. These include a plant at Los Angeles, Cal., with a transmission line 130 miles long; one at San Francisco with a transmission line 100 to 200 miles long; one at Tolo, Ore., with a transmission line 100 miles long; one at Post Falls, Washington, with a transmission line 110 miles long; and one in the City of Mexico with a transmission line 173 miles long. The largest capacity of horse-power reported by any plant outside of Niagara Falls is sixty thousand at San Francisco, and the same amount at Duluth, Minn.

In 1891 The Niagara Falls Power Company, under advice of Professor Rowland of Johns Hopkins University, Professor George Forbes, London, and Dr. Sellers, invited competitive plans and estimates for the development of its electrical power and for its transmission, both locally and at Buffalo. As a result it adopted a two-phase alternating generator of five thousand horse-power, developing about two thousand volts with a fre-

quency of twenty-five as the best method for development. The dynamo was designed by Professor Forbes, the company's electrical engineer, and Professor Forbes provided that the field magnets should revolve instead of the armature. The Westinghouse Electric Company of Pittsburg was given the contract. The first transmission of electric power by this company, as well as its first delivery, was to the Pittsburg Reduction Company, whose name was afterwards changed to the Aluminum Company of America, whose plant No. 1 is located on the lands of the Power Company 2,500 feet from the power houses. At that time electrical engineers estimated that power could be transmitted as far as Albany, 330 miles away, at a less cost than steam power can be produced for, but a transmission of this length has not yet been attempted, in fact the principal transmission of current of The Niagara Falls Power Company is to Buffalo.

In the beginning of the use of Niagara energy, Professor Unwin, Secretary of the Niagara International Commission, said: "Manufacturers have not yet been driven to obtain power by purchasing liquified oxygen in Iceland. The coal fields are not yet exhausted, but the pressure on trade of the cost of energy required is undoubtedly felt. This may be inferred from the ceaseless efforts to reduce the consumption of steam in engines, and to improve the efficiency of boilers. There are obvious causes for this. As trade competition becomes more severe, every item of expenditure in carrying on work is scrutinized, and out of many small economies a material advantage is reaped. Even if in some industries the annual cost of power is a small fraction of the total expenditure, any saving on it is a clear addition to profits."

The period of the construction of the works of The Niagara Falls Power Company was a most interesting one. Beginning October 4, 1890, with the turning of the first shovelful of dirt at shaft No. 1, which was located on New York Central property at the junction of Third Street and Falls Street on the East Side, which important event was attended with due ceremony, the work of construction of the tunnel, wheelpit, intake canal and power houses progressed for several years, and of course, was not only novel, but of larger proportion than any other piece of construction work in this locality. At times Rodgers and Clement employed as high as 1,200 men in the excavation of the great tunnel. This work was hazardous, and twenty-eight men were

killed while it was going on. Naturally it brought a rough class of men to Niagara Falls, and the police court, presided over then, as now, by Police Justice Charles H. Piper, was a busy place. Pay-day, which occurred every two weeks, was usually marked by serious personal encounters between men engaged on the work. Rough buildings were constructed and the men were packed in them almost like sardines. A large number of mules were used in the work, and many of them were kept down in the tunnel. A trip into this great hole in the ground frequently made by the writer during those days was a wild experience. There were mules, negroes, Italians, Poles and steam drills making a scene never to be forgotten. The locality where this work was carried on came to be known as the tunnel district and it still is so-called. The power houses are dignified and very substantial structures built of Queenston limestone peculiar to this locality.

The essential hydraulic features of any water development are an upper level from which the necessary volume of water can be diverted, pipes or penstocks through which the diverted water flows, a lower level into which it can be discharged, and suitable means of converting the potential energy of the water into a form in which it can be readily controlled and utilized. This last may be done by means of turbines or water wheels placed at the lower ends of the penstocks.

In all three plants of The Niagara Falls Power Company and the Canadian Niagara Power Company, the same general design of power development has been followed. The water is drawn in from the level of the upper river through an intake canal, and is thence distributed to the inlet chambers at the head of each penstock. These chambers are protected along the front by iron racks or gratings, which remove all floating ice, logs and other debris. In two of the power houses, additional protection is obtained by an apron wall outside of the iron racks, the water passing from the intake canal into a covered rack chamber through arched openings located below the surface of the water.

A lower level for the discharge of the water taken in at the penstock inlets is obtained by sinking into the earth through solid rock, for a depth of approximately 180 feet, a long, narrow shaft, or wheelpit, over which the power house itself is located.

Down this wheelpit pass a series of parallel vertical penstocks, carrying to the turbines below the water diverted from the river above. From the turbines, the water is discharged into the bottom of the wheelpit and thence finds an outlet to the lower level of the river in the gorge below the falls through a long tunnel with a horseshoe-shaped cross section cut through solid rock at an average depth of 200 feet below the surface.

The mechanical power developed in each turbine is transmitted to the electrical generators located on the power house floor by means of revolving vertical steel shafts passing up through the wheelpit, there being one generator for each turbine. A governor located at the side of each generator operates valves in the turbine in the wheelpit below, and automatically controls the amount of water flowing through the turbine with any change in the amount of electrical power drawn from its generator. In the two power houses on the American side, the capacity of the turbines and generators is 5,500 horse-power each; in the Canadian plant, five units of 10,000 horse-power and five units of 12,500 horse-power are installed.

From the generators, the power, now in the form of electrical energy, is distributed through copper cables to the main copper bus bars located in a subway below the power house floor, and from these bus bars is sent out over feeder cables run in ducts under ground to the different manufacturing establishments located nearby, or is sent to the step-up transformer stations for transmission at higher voltage to Buffalo, Lockport, the Tonawandas, Olcott, Bridgeburg and Fort Erie. The whole system of generators and feeders is controlled and regulated in each power house from a main switchboard.

Power houses Nos. 1 and 2, belonging to The Niagara Falls Power Company, and having installed capacity of 115,000 horse-power, are located about one mile above the Falls on the American side of the river. These two installations operate from a single intake canal and discharge into a single tunnel having sufficient capacity for both plants. The power house of the Canadian Niagara Power Company is located on the Canadian side of the river a short distance above the Horseshoe Fall. This plant has an installed capacity of 112,500 horse-power, with additional capacity amounting to 12,500 horse-power in course of construction. All three plants are interconnected by heavy

copper cables for the transmission of electrical energy so that power generated in any one plant can be sent out either direct to the customers supplied by that plant, or can be transmitted through the interconnecting cables to either of the other two plants for similar distribution. Thus the whole system is a single unit of great flexibility with ample reserve capacity, assuring continuous and uninterrupted service to the customers of both companies.

The present officers of The Niagara Falls Power Company are: President, Edward A. Wickes, New York City; Vice-President and General Manager, Philip P. Barton, Niagara Falls, New York; Secretary and Counsel, Frederick L. Lovelace, Niagara Falls, New York; Treasurer and Assistant Secretary, W. Paxton Little, New York City.

The present officers of the Canadian Niagara Power Company are: President, Wallace Nesbitt, Toronto, Ontario; Vice-President and Secretary, A. Monroe Grier, Toronto, Ontario; General Manager, Philip P. Barton, Niagara Falls, New York; Treasurer, W. Paxton Little, New York City.

CHAPTER VIII

THE CITY OF NIAGARA FALLS

Created March 17, 1892. Its Marvelous Progress and Development.
In a Quarter of a Century it has Become One of the
Most Promising Cities in the United States

THE city of Niagara Falls was created as such when Governor Roswell P. Flower signed the city charter on March 17th, 1892.

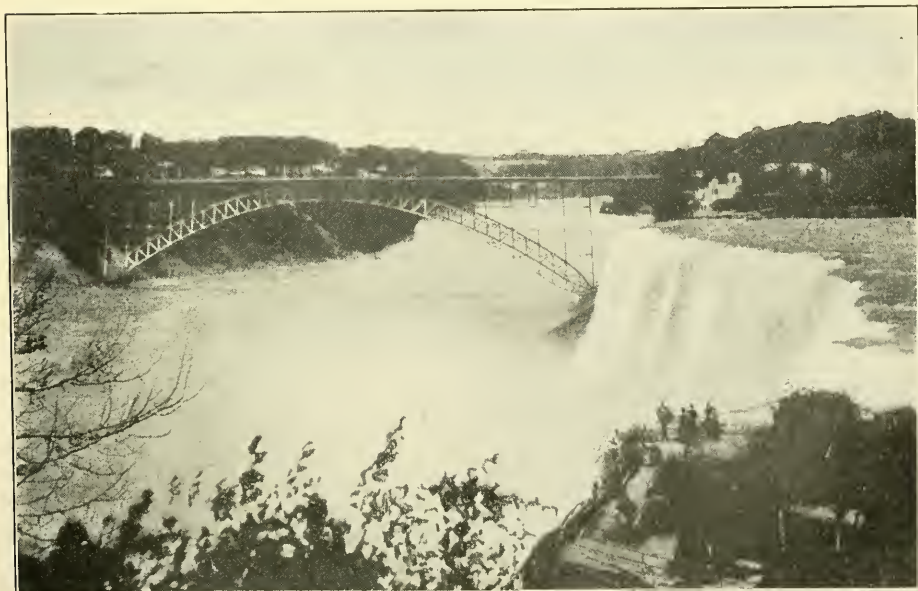
In the next issue the *Niagara Falls Journal*, then owned and edited by the late Hon. Solon S. Pomroy, one of the veteran editors of Niagara County who founded the *Lockport Daily Union* in 1860, said in a two-line editorial: "The city of Niagara Falls. She is a clip. She is a copper. She is a dandy." And Editor Pomroy was a prophet. Upon the *Lockport Daily Union* the author of this book did his first newspaper work, and he was connected with the *Journal*, of which he afterwards became editor and proprietor, at the time that Editor Pomroy wrote the lines quoted above.

The city charter bill was introduced into the Legislature by the late Hon. L. Parsons Gillette of the town of Porter, who was a member of Assembly from this second Assembly district of Niagara County. Governor Flower was ready to sign the charter bill on March 16, but Hon. Thomas V. Welch and Hon. W. Caryl Ely, both of whom had served three terms in the State Assembly, were in Albany, and Mr. Welch requested the Governor to defer signing until the following day, which was St. Patrick's day. The shamrock, therefore, looms large on the city's natal day.

The city of Niagara Falls was made up of the former villages of Niagara Falls and Suspension Bridge and a portion of the rural



CANTILEVER AND STEEL ARCH BRIDGES



INTERNATIONAL RAILWAY STEEL ARCH BRIDGE



THE RAPIDS ABOVE THE FALLS



THE HORSESHOE FALLS

part of the town of Niagara within which these villages were situated. It was at first proposed to include the village of LaSalle, not then incorporated, where the explorer of that name built the Griffon, but this idea was abandoned. As it is, the landed area of the city is 6,970 acres, which includes the 412 acres in the New York State Reservation at Niagara. The population of that territory then was estimated to be about 10,000. By the United States Census of 1900 it was 19,452; in 1910, 30,445, a gain of fifty-six per cent, the greatest percentage of increase of any city in the state except Schenectady; whereas the State Census of 1915 showed the population of Niagara Falls to be 42,257, the thirty-eight per cent increase being the greatest percentage of gain of any city in the State of New York.

The incorporation of the city of Niagara Falls naturally followed the inauguration of the great electrical power development. The eyes of the civilized world were turned upon this locality as never before. People were flocking here to locate. There was great activity in real estate, and farms lying out several miles from the centers of the two villages were purchased and plotted. The community, in the matter of public improvements, must keep step with its own progress. Accordingly after some preliminary agitation, a committee of prominent citizens of both villages was organized which drafted the charter for the city.

The first city election was held in April, 1892, and resulted in the choice of George W. Wright, Democrat, as the first Mayor of the new city. The other candidates were Gen. Benjamin Flagler, president of the Bank of Suspension Bridge, and for eight years United States Collector of Customs for the port of Suspension Bridge, the Republican nominee, and William H. Cornell, also a Republican who ran on an independent ticket and was president of the former Village of Suspension Bridge. The city was divided into four wards and the legislative body of the city was the common council composed of two aldermen from each of these wards. There are now thirteen wards in the city. The system of ward aldermen has obtained during most of the city's history, but at one time the charter was amended to provide for aldermen-at-large. In 1911 the charter was again amended to provide for one alderman from each of thirteen wards, and the legislative body, as thus constituted, automati-

cally passed out with the advent of commission government on January 1, 1916, which form of government provided for a Mayor and for four councilmen, with a city manager, which this commission appointed. Many other officials and boards also passed out with the coming of the new regime. In the beginning the Mayor presided over the deliberations of the Common Council, but for quite a number of years a President of the Common Council was elected. The city charter was amended at nearly every session of the Legislature and became very much of a patchwork. The new system is one of seven forms suggested in an optional charter law passed by the Legislature in the interest of home rule, and it will not be necessary to appeal to the Legislature for a grant of power in the matter of the petty details of city government.

It has been said that today is the "hearse that carries the dreams of yesterday to the cemetery." But many of the dreams of yesterday are realities in Niagara Falls today. Dreams are good things in many cases. The man without a vision, without some imagination misses some of the pleasures and profits of life.

We dreamed of the harnessing of Niagara. Today we see the greatest electrical power development in the world.

We dreamed of the brilliant illumination of our streets. Today we have the finest lighted thoroughfares in all America.

We dreamed of the possible manifold uses of Niagara power. Today we have the electric furnace which produces a heat so intense as to stimulate some of the primal forces of Nature. It alone, has made possible the production of artificial gems; carborundum, the hardest of manufactured substances, calcium carbide, which lights more than 200,000 houses, and artificial graphite. It produces the greatest quantity of aluminum made in the world, and has reduced its price from twelve dollars to twenty cents a pound. It has made possible the fixation of atmospheric nitrogen, and revolutionized the steel industry.

The Niagara gorge was first spanned by a kite string, like a spider spinning his thread. It was followed by a cable upon which passengers rode across in a basket. Then came the suspension bridges, wonders of their time, while now the stately steel arches grace the canyon and form safe passageways for almost countless thousands of people. The process of bridge-

building was one of evolution, and each step represented a dream.

The establishment of the New York State Reservation at Niagara and the making of Niagara's scenes free to all mankind forever was a dream of Thomas V. Welch and others, and it has come to a splendid realization.

A little more than twenty-five years ago the first electric railroad car made its appearance, and Niagara Falls was one of the first communities to install an electric railroad system. About a quarter of a century ago horse cars traversed our main streets, and a few years ago Lincoln Beachey sailed in an aeroplane, with all the gracefulness of a bird, two thousand feet above the great cataracts, and then thrilled thousands of spectators with his daring dash down into the gorge, under the steel arch bridge, and then rose again into the air. Who that rode upon the horse cars on Falls Street twenty-five years ago would not have characterized Beachey's flight as the wildest of dreams?

Jacob F. Schoellkopf was thought to be a dreamer when he bought the hydraulic canal for \$75,000. What man today does not wish that he could have such a dream.

William B. Rankine, the struggling young lawyer, was a dreamer when he went to New York and secured the money to build the great plant of The Niagara Falls Power Company. That company now has about \$25,000,000 invested in electrical development.

Dr. Edward G. Acheson was a dreamer when he invented carborundum and graphite. The first carborundum was worth \$432 per pound. At that price the fifteen million pounds of carborundum made in a year would be worth over five billion dollars.

Charles M. Hall, the inventor of aluminum, was a dreamer. The original price of aluminum was twelve dollars per pound. The product of the Aluminum Company of America in a year is 12,000 tons or 24,000,000 pounds. At twelve dollars per pound this annual product would have been worth \$168,000,000. At the present market price of twenty cents per pound, it was actually worth nearly \$5,000,000.

Captain Charles B. Gaskill was something of a dreamer when he built the flour mill which was the first industry to use power from the hydraulic canal about forty years ago, but, it is

estimated that \$75,000,000 is now invested in power development and manufacturing enterprises in Niagara Falls which today give employment to 12,000 people.

Let us make a few comparisons between the Niagara Falls of yesterday and the Niagara Falls of today, the city of Niagara Falls when it was created twenty-four years ago and the city of Niagara Falls in 1916. Then we had 10,000 people; now we have 42,000 people. Then we had three schoolhouses; now we have a dozen. Then we had no paving; now we have fifty-three miles of paving. Then we had a few scattering sewers; now we have eighty-three miles of sewerage. Then we had an antiquated horse-car line; now we have over twenty miles of electric railroad tracks. Then we had some crude water-power; now we are developing over 200,000 electric horse-power within our boundaries. The first annual budget of the city was \$79,000; now it is nearly \$800,000. In the early days of the city, building operations were slow and the aggregate small. In the past ten years, the building permits granted in this city have averaged \$1,000,000 per year. Then, if we wanted to talk to anyone, we had to go and see the person; now there are over 5,000 telephones in the city. The comparisons might be continued indefinitely to illustrate not only general progress, but special local progress in less than a quarter of a century.

Only recently I visited St. John's Church in the city of Richmond, Va., which antedates the Revolution, and where Patrick Henry made his immortal speech in which he exclaimed: "Give me liberty or give me death." In that speech, which was heard around the world, he also said: "The only lamp that I have to guide my feet is the lamp of experience." The same light guides us today. Standing upon the summit of a quarter of a century of cityhood and surveying with justifiable pride our splendid achievements, contemplating the Niagara Falls of yesterday and of today, and what the highest work of creation and the greatest genius of man, working in harmony, have done for us, we can reach only one conclusion, and that is that the city of Niagara Falls is destined to take its place among the mighty communities of the earth, that on no fairer, stronger, more useful association of mankind "has e'er the sun shone," assembled at that place described by Father Hennepin in 1679 where "a vast and prodigious cadence of waters falls down after a surprising

and astonishing manner insomuch that the universe does not afford its parallel."

We live in one of the most famous cities of the world, and we are citizens of the Imperial State of the greatest nation on the globe. At our thresholds is bounteous Nature's most magnificent gift to mankind, the Cataracts of the Niagara. Past our doors runs a mighty flood drawn from the world's largest chain of fresh water lakes, and borne in billowy brilliance the eight hundred miles from Niagara to the sea. Viewed first by the primitive red man and later by the priest of the church, this sublime spectacle has filled with awe pilgrims from every country and every clime.

In the last quarter of the nineteenth century, filled with greater accomplishments than any other similar period in the world's history, man's genius, superb courage and boundless financial resources wrought the crowning scientific triumph of all time in the electrical harnessing of the most potential river on the globe.

Now in the opening years of the twentieth century, the city of Niagara Falls, in a double sense, occupies a commanding place upon creation's map. Within its borders is the grandest of all Nature's scenes, and the fountain head of the electrical age. Four hundred miles away at the gateway of the new world, situated principally upon an island sold by native Americans for twenty-four dollars, is the metropolis of the western hemisphere, the most cosmopolitan city in the world, within whose boundaries more wealth is stored than in any similar space, whose buildings rise to the greatest heights, whose inhabitants are transported in the bowels of *terra firma*, whose commerce is conveyed in ocean greyhounds to the ends of the earth, and whose water supply, transportation, building, financial and general human interest projects involve figures that stagger the imagination of the most optimistic. New York at the portals of the continent. Niagara Falls on the boundary of two nations, standing sentinel on the western border of the premier state of the Union. Who shall say them nay?

Industrial concerns can locate a plant on each side of the river—one in the United States and one in Canada—and operate the two plants with one executive force beside being free from tariff complications.

Shipping facilities are unexcelled, with eight trunk lines of railroad entering here, and water transportation as well by the Niagara River, Great Lakes and Erie Canal.

Within five hundred miles of Niagara Falls sixty per cent of the population of the United States and eighty per cent of the population of the Dominion of Canada resides. New York is less than five hundred miles away and Chicago about that distance, while the leading Canadian cities of Toronto, Montreal and Quebec are easily reached by lake and river, or by rail.

Over one million freight cars are handled in the joint railroad yards of Niagara Falls annually.

The value of the annual exports and imports from Niagara Falls has been shown by the report of the United States customs house, to be over \$50,000,000. Over 1,000,000 passengers arrive from foreign territory annually. Over 7,000 passenger trains are inspected. Over 150,000 pieces of baggage are stamped by customs officials annually. Over 4,000 express cars are sealed for transportation through Canada annually. The number of freight cars inspected and sealed for transportation through Canada annually is 250,000. The number of entries at the Niagara Falls port has reached over 26,000 annually.

The post-office receipts of the city of Niagara Falls for the year ending March 31st, 1915, were \$156,636.28.

The assessed valuation of the city of Niagara Falls for the year 1915 was \$36,785,780, which is nearly one-half that of the entire county of Niagara.

Niagara Falls has a new municipal water supply and filtration plant costing \$1,000,000.

The New York Central Railroad Company handles over 10,000,000 pounds of package freight per month in Niagara Falls.

The registration in the public schools in Niagara Falls was 6,031 in 1914-15, as against 4,688 the preceding year. The total school population, both public and parochial, is estimated to be 8,000. The city has a high school and twelve grade schools.

Niagara Falls has three State banks, a trust company, and a savings bank, with total deposits of over \$10,000,000, and a total capital and surplus of over \$1,000,000.

About 1,500,000 visitors from every part of the civilized world come annually to visit the wonders of scenic Niagara.

As an evidence of the change in business conditions in Niagara Falls from that of an almost exclusively tourist resort to an important industrial center, as well, it may be cited that in one year twenty-five manufacturing concerns reported to the Industrial Agent, the author of this work, an aggregate product valued at over \$30,000,000, or an average of much over \$1,000,000 each. Nearly all of these concerns are exclusive in their lines. Two of these had a product of \$5,000,000 each, one of \$3,500,000, one of \$2,000,000, one of nearly \$2,000,000, two of \$1,500,000, one of \$800,000, one of nearly \$750,000, and all except four of over \$100,000. These concerns employed during the year in question nearly 8,000 people. The total value of the manufactured product of the industrial concerns of Niagara Falls in a year is estimated to be over \$40,000,000. This flattering business situation has been brought about by the first and greatest electrical power development on earth.

An evidence of the great business development of the city of Niagara Falls is the increase in the assessed valuation. In 1892 when the city was formed, the assessed valuation was about \$8,000,000. Ten years later in 1901 it was \$15,269,247. In 1902 it was \$16,950,025; in 1903, \$17,709,880; in 1904, \$18,587,790; in 1905, \$19,247,520; in 1906, \$20,953,595; in 1907, \$22,163,075; in 1908, \$23,404,760; in 1909, \$24,177,000; in 1910, \$25,780,000; in 1911, \$30,175,020; in 1912, \$32,403,935; in 1913, \$35,012,997; and at this writing it is \$36,785,780.

In 1914 the production of abrasives here was 40,000,000 pounds. The production will be increased on account of the construction of a new plant. It is estimated that over seventy-five per cent of the total production of abrasives in the country is at Niagara Falls. One of the new abrasive products here will be Naxos Emery. Emery derives its name from Cape Emeri, on the Island of Naxos, the largest of the Cyclades group off the coast of Greece. The principal sources of the world's supply are here, and Asia Minor, from which place the so-called Turkish ore is obtained. The production of emery on the Island of Naxos is under government control and the product in one year has been as high as 11,000 tons. The small production in other parts of the world is shown by a product in Canada in one year of 742 tons and in India of 137 tons.

Niagara Falls is the chief seat of the electro-chemical industry,

and it has held this position from the beginning. Of the total value of products produced by the aid of electricity in 1909, New York reported \$13,401,878, or 72.6 per cent, and over \$11,000,000 worth of this product was made at Niagara Falls. Niagara Falls being centrally located, and having eight trunk lines of railroad, secures especially favorable freight rates.

The varied products of Niagara Falls manufacturing institutions include: Aluminum, abrasives, salesbooks, flour and feed, graphite, wall paper, iron castings, electrodes, brick, brass castings, barrels, paper boxes, chemicals, print paper, beer, silver-plated ware, frogs, switches, switchstands, shredded wheat biscuits and triscuits, toilet powder, calcium carbide, storage batteries for lighting and heating railway coaches and electric starters for automobiles, chewing gum, corsets, warm air furnaces, hooks, eyes and fasteners, titanium alloy for steel rails, wire stitchers, electric switches, lightning arresters and printing presses, pea hullers, metal stamped goods, knit goods, pulp, boilers, hair cloth, searchlights, leather tire goods, carbon, ice, electricity, gas, weather strips, lastic air for automobile tires, paints, chloro benzole, automobile timers and telephone intensifiers, and varnishes and aviation materials.

The leading manufacturing concerns in the city include: Allen & Hanbury Company (infants' foods); Aluminum Company of America (three plants); American Salesbook Company; Carborundum Company; Castner Electrolytic Alkali Company; Cataract City Milling Company; Cataract Consumers Brewery; Cliff Paper Company; Central Machine Company (electric switches, etc); Chisholm-Scott Company (pea hullers); Defiance Paper Company (wall paper); Dobbie Foundry and Machine Company; Dupont Powder Company; Eagle Paint and Varnish Company; Electro Bleaching Gas Company; Electro Metallurgical Company; Electrode Company of America; Francis Manufacturing Company (hooks and eyes); Frontier Brick Works; Frontier Brass Company; International Cooperage Company; General Abrasive Company; Hinds' Paper Box Works; Hooker Electro-Chemical Company; Hydraulic Power Company; Mitchell Builders' Supply Company, Inc.; International Paper Company; International Acheson Graphite Company; Leather Tire Goods Company; Lockport Paper Company; National Electrolytic Company; Niagara Alkali



VIEW FROM GOAT ISLAND

Looking toward the American shore before the establishment of the Niagara Reservation, July 15th, 1885, showing paper mill on Bath, now Green Island



VIEW FROM SAME VANTAGE POINT ON GOAT ISLAND

Showing conditions as they are today



THE SHORE OF THE AMERICAN RAPIDS ABOVE THE GOAT ISLAND BRIDGE
As it looked before the State removed the buildings on the Niagara Reservation



THE SHORE OF THE AMERICAN RAPIDS ABOVE THE GOAT ISLAND BRIDGE
As it looks today

Company; Niagara Falls Brewing Company; Niagara Electro-Chemical Company; Niagara Falls Metal Stamping Works; Niagara Falls Milling Company; Niagara Falls Furnace Company; Niagara Searchlight Company; Niagara Foundry Company; Niagara Insul-Bake Specialty Company; Niagara Falls Hair Cloth Company; Niagara Falls Power Company; Niagara Carbon Company; Niagara River Manufacturing Company; Niagara Steel Finishing Company; Norton Company (abrasives); Oldbury Electro-chemical Company; Peace Metal Weather Strip Company; Power City Boiler Works; Pettebone Cataract Paper Company; Philpott and Leuppie Company (special machinery); Phosphorus Compounds Company; Ramapo Iron Works; William A. Rogers Ltd. (silver-plated ware); Shredded Wheat Company; Sutherland-Innes Cooperage Company; Spirella Company (corsets); Spiro Powder Company; Salom Electric Storage Battery Company; Titanium Alloy Manufacturing Company; McGarigle Machine Company; Lastic Air Company; Lehmann Cork Helmet Company; Union Carbide Company; United States Light and Heating Company; Visor Knitting Company; W. J. White Chicle Company.

Our present greatness was largely the result of the century-old vision and foundation-laying of Augustus Porter and the latter day splendid fulfillment led by William B. Rankine and Jacob F. Schoellkopf. These men of talent and of energy, who guided the thunder waters to the realization of man's great purpose and who have recruited the ranks of the unreplying dead, were as the pathfinders of a continent marking the trail across arid plains and scaling the rugged mountain-sides ten thousand feet or more. In the great work which these men did, they exemplified these lines of the old gospel hymn:

“Sowing in the sunshine, sowing in the shadow,
Fearing neither clouds nor winter's chilling breeze;
By and by the harvest, and the labor ended,
We shall come rejoicing, bringing in the sheaves.”

And we who remain need not hesitate to lay our hands to the task that lies before us, for Eliot has said that “The blessed work of helping the world forward happily does not wait to be done by perfect men.” And Spurgeon said that “Many men owe the grandeur of their lives to their tremendous difficulties.”

Many of us are attached by tender ties to village days, but the great majority of our citizenship is chiefly concerned with the industrious and prosperous present and the expanding future which spreads its brilliant vista before us.

Twenty-four years a city! And these were years full of accomplishment. Within this brief span, summer resort villages have become a great manufacturing center and yet Nature's shrine is unimpaired. First, the dense forest and the primitive savage, then the crude early settlement and devastating war; later, the noble work of the sturdy pioneer; now, the massive power houses reared of native stone within whose walls giant yet almost silent 5,000, 10,000, and 12,000 horse-power dynamos whirl ceaselessly, converting Niagara's flood, which has poured down for centuries unutilized, into that subtle force that turns countless wheels of industry, enters largely into transportation, changes darkness into light, and is a potent element in almost every sphere of human activity.

What was the village of Niagara Falls when the city was organized was first called Schlosser, and afterwards Manchester, after the manufacturing city by that name in England, because it was early thought that the power-producing capabilities of the Niagara River would make this an industrial community. The generation living at that time, however, did not see the development. The village of Niagara Falls was incorporated in 1848. What was the village of Suspension Bridge when the city was formed was first called Bellevue. In 1854 the territory was incorporated as a village and called Niagara City. For some thirty years it was named Suspension Bridge after the great structure that spanned the gorge there. Following the incorporation of the city, the name was gradually dropped in connection with various public and business institutions, but it was not until 1915 that the bank of that name made a change in its title.

The name "Niagara" first appeared in Coronelli's map published in Paris in 1688. It is said to be the oldest of local geographical terms coming down from the aborigines. This name is also remarkable for the number of ways that there have been of spelling it. There are thirty-nine other Niagara names, as follows: Iagara, Iagare, Jagara, Jagare, Niagaro, Niagra, Niagro, Ockinagaro, Ochiagara, Ochjara, Octjagara, Ochinagero, Oneagerah, Oneigra, Oneygra, Oniagara, Ongagerae, Oniagorah,

Oniagre, Oniagro, Onjagara, Onjagera, Onjagora, Onjagore, Onjagoro, Onjagra, Onygaro, Onyagara, Ongajare, Ongagaro, Onyagoro, Onyagra, Onyagarr, Onyagro, Oneygra, Oneagoragh, Yagero, Yangree.

Regarding the significance of the word "Niagara," there could not be a more eloquent and comprehensive manner of presenting it than is found in one of Hon. Peter A. Porter's historical articles, where he says:

"To the lover of Nature it recalls one of the scenic wonders of earth, 'for the day when one's eyes first rest upon the cataracts marks an epoch in the life of any man.'

"To the traveler, it represents the one spot above all others in America that he wants to visit.

"To the geologist, it unfolds a vista of thousands, yes, perhaps millions, of bygone years.

"To the student of anthropology it suggests the question of the ancestry of the red race, that ages before a white man reached its shores, roamed this continent, and knew of the existence of the waterfall.

"To the historian, it tells of wars, inter-tribal and international, waged hereabouts, on whose outcomes hinged the destinies of North America.

"To the economist, it represents the greatest natural storehouse of power on the globe.

"To the electrician it recalls the greatest development of that force in one locality on this continent.

"To the ecclesiastic it brings up memories of some of the earliest but eventually unsuccessful missions of the Roman Catholic Church among the Indians.

"To the manufacturer it speaks of one of the greatest and the most rapidly enlarging of the industrial centres of America.

"To the engineer, whether civil, electrical or hydraulic, it recalls many notable achievements in the various branches of that science.

"No other single spot on earth is so universally known as Niagara; no other location recalls more and more varied recollections."

CHAPTER IX

AN IDEAL MANUFACTURING PLANT

The Shredded Wheat Company Makes Annually at Niagara Falls
More Than 1,000,000 Cases of Cereal Food Which has a
World-wide Market

WHEN the above building is completed, it will be of a size sufficient to include the entire National Cash Register Company's plant, and be unsurpassed by any factory building in the world."

Thus spake Edward A. Deeds, chief engineer in the construction of the plant of the Shredded Wheat Company, on December 14, 1900, when it was announced that this great concern would locate in Niagara Falls. And Mr. Deeds knew whereof he spoke because he was connected with the National Cash Register Company. Since the completion of the factory it has often been said that "One might as well see Rome without seeing St. Peters, as to see Niagara Falls without visiting 'The Home of Shredded Wheat.' " And it has been further said that, "Here was a building whose builders had the daring to invade the choicest residence neighborhood in the town to plant an industry far away from the smoke and dust of factory and railroad. This search for cleanliness and beauty, as foolish as it might seem to the hard-headed man of finance, naturally constitutes one of the attractive features of the plant and gives it a unique place among food manufacturing concerns of the world."

And 100,000 visitors from all parts of the civilized world go through this factory every year and view every process in the making of this cereal food. This is one of the few manufacturing establishments that invites the fullest inspection and furnishes guides to show visitors through.

The concern was first incorporated under the laws of the State of New York as the Natural Food Company, with a capital of \$10,000,000. Later the corporate name was changed to The Shredded Wheat Company. There is \$1,250,000 of preferred stock, and \$8,750,000 of common stock. The common stock first sold as low as 8c. on the dollar, and it has recently been sold above par. Last year the company built another plant in Niagara Falls half the size of the parent plant, and it is now building a fine plant in Oakland, California. Its annual consumption of wheat for several years has exceeded 700,000 bushels, and it buys wheat in 100,000 bushel lots from the far west as well as taking Niagara County and Western New York wheat that is offered. The production of wheat in this section is, however, a mere drop in the bucket compared with the company's needs. The company's product is sold all over North and South America, and in Europe.

This great industry came here from Worcester, Mass., where it had made a good start. Negotiations for its location in Niagara Falls were conducted by William B. Rankine, vice-president of The Niagara Falls Power Company, and when they were well advanced a delegation of Niagara Falls citizens was taken to Worcester in a private car to inspect the plant there. In connection with the Worcester plant there was also a school of domestic science, known as "The Oread Institute." Its purpose was to teach young women how to demonstrate the process and uses of this food. It was originally planned to bring that institute to Niagara Falls, but that part of the plan was not carried out.

Henry D. Perky was inventor of the shredded whole wheat biscuit, and he also invented the machine to make it. It had been on the market five years when the plant was located in Niagara Falls. The plant at Worcester was using 700 bushels of wheat per day, at the time the new plant was located here. Associated with Mr. Perky in the company that was organized under the laws of the State of New York, Mr. Perky being the president and treasurer, were: the late William B. Rankine, vice-president of the Niagara Falls Power Company and its allied interests; Edward A. Deeds, who was the mechanical engineer and who was connected with the National Cash Register Company of Dayton, Ohio, and Ira C. Hubbell, president of the Locomotive Appliance Company of Chicago.

Mr. Perky was a creditably conspicuous man in American commercial and educational affairs. He was a man of marked individuality and sincerity of purpose, and this second characteristic he could not have possessed if he had not been a philanthropist. His idea was that, a man to be at his best must have a mission in life, and must be self-appointed to this mission. Several years previous to the location of the plant at Niagara Falls, Mr. Perky reached the conclusion that mankind in general was far from enjoying the physical advantages that all things in Nature clearly indicate are his by natural law. In searching for a correct and explicit explanation of this condition, he reached the conclusion that the physical ills of man were due to an attempt to improve on the chemistry of Nature, the outgrowth of a false, but quite general education for which the educational institutions are responsible. He was, however, aided in a superlative degree by a practical demonstration of his then new and untried theory, and in that demonstration he had himself for a subject. Mr. Perky was a native of Ohio; he studied law and was admitted to the bar in Nebraska. When only twenty-five years old, he was elected to the Nebraska State Senate. His health failed, and he moved to Colorado, and, among other things, Mr. Perky projected the holding of a national mining and industrial exposition at Denver. Later, he became an attorney for the Union Pacific Railroad. The Colorado climate, however, failed to improve his health, and he finally conceived the idea of eating whole, unground wheat, first boiling the grain to make it palatable and easier of mastication. This did improve his health, but it was a laborious task to prepare the food, and he invented a machine for so separating the fibres of whole wheat grain that not a particle of their nutritive principle should be lost. This was the shredded machine later used in the great plant here. Mr. Perky was restored to complete health by eating this food. He claimed that there was that in it which nourished every atom of his body. He claimed that ninety per cent of school children had defective teeth, and that ninety-five per cent of Americans who engage in business fail, simply because they are not what they should be physically.

A little more than five years previous to the location of the Shredded Wheat Company's plant in Niagara Falls, there was formed in Colorado a corporation called the Cereal Machine

Company, with a capitalization of \$1,400,000. Later, the company moved to Worcester, Mass., and began the manufacture of shredded whole wheat biscuit. The controlling hand in the Worcester enterprise was, after awhile, Mr. Perky, but the venture with even him at the head met with difficulties of almost every nature. The product was a new and untried one; the machinery for its production was likewise new. The people as a mass had to be taught how to prepare the biscuit, and this in itself was a task of such prodigious proportions that wellnigh every one declared that it could not be accomplished. Virtually all Worcester said this, but Mr. Perky said it could be done, and one morning Worcester awoke and found the task accomplished. Besides establishing the Oread Institute at Worcester, Mr. Perky lectured in many cities upon the subject of proper food.

The property purchased by the company has a frontage of 800 feet on the south side of Buffalo Avenue, and 500 feet on the north side, and was purchased outright with all the buildings on it, many of which were afterward removed. Several of the finest residences in the city were torn down. The first shovelful of earth was turned Saturday, December 15, 1900. At that time, this was the biggest project in the industrial development of Niagara Falls since the inauguration of the construction work of The Niagara Falls Power Company. The building was then and is now one of the model factories of the world. The estimated cost was over a half million dollars, and the final cost over a million dollars.

Briefly stated, the plant is 542 feet long, sixty-six and one-half feet wide, six stories high, and a marvel of mechanical and architectural triumph, and contains every feature of sanitation, every facility for the practical conduct of business, and every detail that the experience of the past teaches must be supplied to produce the ideal industrial plant.

As soon as the company purchased the property here, the Common Council of the city formally closed Fourth Street, south of Buffalo Avenue, to public traffic. It was planned to complete the building within five months, and, in order to accomplish this, work was begun at three different places, the workmen completing as they proceeded. The scheme was to follow the contractor with such rapidity that when he had half the roof laid, some of the machinery was set up ready for operation;

and when the contractor left the building, every piece of machinery was installed and in operation.

The buildings of the company constitute the most ideal plant for the purpose in the country, and because of the unique process and product, are unparalleled in the world. The original idea of these buildings, as well as the process and product, is credited to Henry D. Perky, who was a recognized authority upon foods. The factory covers an area of 53,616 square feet. The total area owned by the company is 65,101 square feet or about four and a half millions of cubic feet.

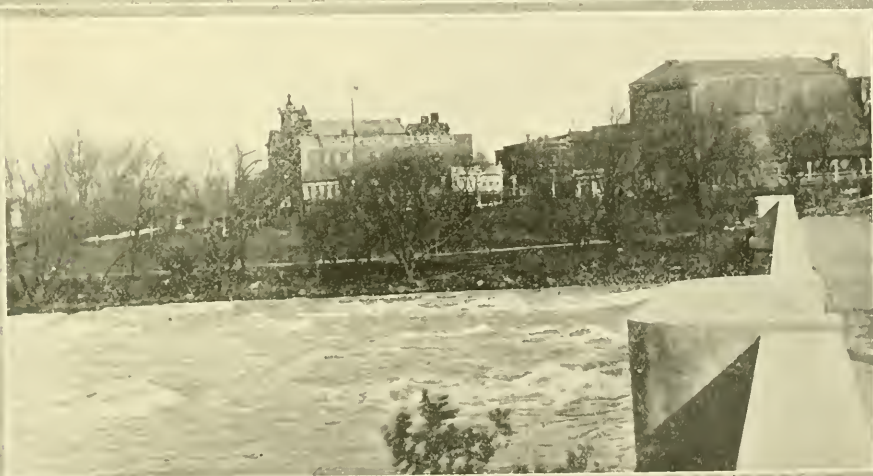
In an editorial, the then editor of the *Cataract-Journal*, the author of this book, on Saturday, December 15, 1900, following the paper's announcement the day before of the location of the great plant, said:

"Great is the industrial city of Niagara Falls! As has well been said: 'Electricity will be the king of the twentieth century, and Niagara Falls its eternal throne!' The lusty young city of Niagara Falls, less than nine years old, has attracted world-wide attention during that time because of the marvelous and stupendous development of the water power and its conversion into electrical energy for all of the uses that the ingenuity of man can devise. Celebrated throughout the globe for the wonderful things that nature has wrought here, Niagara Falls has taken on a new phase in the past ten years. It has become an industrial city, and catering to the tourists from all over the world, who come here every year, has become secondary to the industrial interests that have followed the great power development.

"Many great industries have located here, and their location and the character and extent of their product have attracted wide attention as well as being the means of inducing many people to become residents of this city. During the past few years especially has Niagara Falls received a great deal of attention from the press and the business men of other cities for the reason that the census of 1900 shows that our growth in population has exceeded in percentage of increase that of any other locality in the United States. That is the practical, substantial and indisputable result of the harnessing of the Falls of Niagara and the conversion of their great and ceaseless power to the purposes of man. It is true that when the city was incorporated, some territory was taken in, but that is true of every city showing a large



VIEW FROM THE OLD GOAT ISLAND BRIDGE
As the American shore looked when the State took charge



VIEW FROM THE CENTER OF THE NEW GOAT ISLAND BRIDGE
As the American shore looks now



VIEW OF THE AMERICAN RAPIDS FARTHER UP THE RIVER
Looking toward the American Falls and showing the Old Goat Island Bridge



VIEW OF THE AMERICAN RAPIDS
Looking down the river, showing New Goat Island Bridge and Canadian side

increase in population in the last decade. But even taking in all of the people living in 1890 in the territory now embraced in the city of Niagara Falls, the increase in population in ten years is 100 per cent.

"There is no boom, in the commonly accepted meaning of the word, about it. The growth has been steady, substantial, and built upon a foundation of rock. There can be no backward movement. The future of Niagara Falls as a great industrial city is assured beyond the shadow of a doubt. The year which is about to open will witness wonderful things here. We believe that it will be the greatest in our history.

* * * * *

"The capital stock of the Natural Food Company is \$10,000,000. These figures are so large as to be almost staggering, but in this age are far from impossible. It cost the company \$12,500 to file its incorporation papers with the Secretary of State."

Since the plant was completed it has been written: "There are factories and factories! But the Shredded Wheat factory is unique. There is nothing like it in this or any other country. It is the dream of a dreamer, fully carried out. This dreamer, who invented shredded wheat biscuit, said he would build the cleanest, finest, most hygienic factory in the world in which to make the cleanest and purest cereal food in the world, and he succeeded in making good his promise."

The building contains lavatories costing \$100,000, and an auditorium with a seating capacity of 1000 persons. Welfare work is one of the conspicuous activities of the company. With unstinted generosity, the company provides opportunities for mental, manual, artistic and social development. In erecting the building, 3000 tons of steel and 200 tons of marble were used. There are 844 windows in the building which contain 30,000 lights of glass.

The annual production of the company now far exceeds one million cases of shredded wheat. As each case of shredded wheat contains 432 shredded wheat biscuits, and as each of these biscuits is about four inches long, it has been estimated that if a year's production of biscuits were placed end to end it would more than reach around the world.

After the great plant of the Shredded Wheat Company had been erected and put into operation in Niagara Falls, Henry D.

Perky retired as its active head, and in the fullness of his years was gathered to his fathers. Fortunately, the direction of the company's business affairs had fallen into capable hands, and under wise, conservative and progressive management of all its departments, the sales of the product have increased from year to year until it is now recognized as one of the great industrial successes of our time—a monument to high ideals in business administration and in humane treatment of employees.

CHAPTER X

THE GREAT QUESTION OF DIVERSION

How the Agitation Alleging Impending Destruction of the Scenic Grandeur of Niagara Falls Began—The Burton Law—The Opinion of Secretary of War William H. Taft

CLOSELY associated with the great question of the conservation of natural resources, the most important phase of which is the use of water for the development of electrical power, has been the agitation against the diversion of the water of rivers and streams, upon the plea that the natural scenery would be destroyed or visibly affected. As the first and greatest hydro-electrical power development upon the globe is at Niagara Falls, and the cataracts are the greatest of all the natural wonders of the world, the interest in the diversion question has centered here. As has been shown in the historical sketches in this book, many years intervened between the time when power development was first suggested and the time when it was undertaken upon a large scale, and great efforts were made to get capital interested. The beginning of the work was universally welcomed, and many millions of dollars were invested in the power development enterprises before the diversion question received any general attention. In fact, the power development enterprises on the American side of the river had been successfully consummated before the cry was raised that the scenic grandeur of the Falls of Niagara was seriously threatened and the statement made that the great natural spectacle might be wholly destroyed unless the strong arm of the government of the United States and that of Great Britain in conjunction should intervene to prevent it.

The volume of water taken from the upper river and returned

to the lower river by the American companies is wholly insignificant and has no appreciable effect upon the flow over the American Falls, but the success of the American companies inspired the Canadian government to grant three separate charters to power companies to be located on the Canadian shore immediately above the Falls, and in about the year 1903 these companies began to construct their plants.

This agitation was initiated by an organization known as the American Civic Association, whose activities were directed by and largely confined to its president, J. Horace McFarland, of Harrisburg, Pa. Upon the official and membership roll of the organization appear the names of many prominent men and women, but Mr. McFarland himself wrote magazine articles, delivered lectures, sent letters and literature all over the country, and appeared at congressional and legislative hearings in the interest of the alarmist propaganda that he had instigated. The articles and sketches appearing in leading periodicals were either grossly exaggerated or wholly without foundation, and thousands of communications were sent to individuals throughout the country requesting them to telegraph or send letters to members of Congress in the interest of "saving the Falls of Niagara" from destruction at the hands of the power companies.

It was demonstrated by this propaganda that the human mind is easily aroused in the interests of preserving the scenic grandeur of a natural wonder like Niagara Falls, and sentimental people not acquainted with the facts were greatly prejudiced by statements and pictures giving a wholly ridiculous and exaggerated view, rather than actual conditions, of the Falls. As a matter of fact, the people living in proximity to the Niagara River, who are therefore the most jealous guardians of its scenic features, know that from the time that the diversion of its waters for the purpose of developing electrical power commenced to the present day there has been no appreciable difference in the flow over the Falls that the human eye can detect. The American power companies co-operated, some years ago, with the engineer of the United States Lake Survey, and the power plants were shut down for several hours during which tests were made, and the gauges showed that the diversion lowered the American Falls about three-eighths of an inch, and the Horseshoe Falls about three inches at their center. The eye could not detect such



THE AMERICAN FALLS IN SUMMER



THE AMERICAN FALLS BELOW PROSPECT POINT IN THE GRIP OF WINTER
Showing the ice mound which is sometimes one hundred feet high



Copyright, 1907, by B. H. Norris

THE NIGHT ILLUMINATION OF THE FALLS IN 1907



QUEEN VICTORIA PARK ON THE CANADA SIDE

diversion, nor could it detect a materially larger diversion than that.

Upon this subject, however, great volumes of reports have been printed and a great mass of testimony produced. The Congress of the United States has been dealing with the matter now for over ten years, and the treaty-making power of the governments of the United States and Great Britain has been utilized in connection with it. The direct assumption of jurisdiction over the Niagara River by the Federal government was based upon the ground, regarded by many as far-fetched, that navigation of the Niagara River and the Great Lakes, or the international defenses, might be affected by the power diversion, and it grew out of a message by President Roosevelt to the first session of the fifty-ninth Congress, dated March 27, 1906, transmitting a report to Congress made by the International Waterways Commission regarding the preservation of the Falls of Niagara. The report of the International Waterways Commission was requested by a joint resolution passed by Congress March 15, 1906, directing the Commission to report to Congress at an "early date what action is, in their judgment, necessary and desirable to prevent further deflection of the waters flowing over Niagara Falls."

The commission in its report found that in 1896 the Niagara Falls Hydraulic Power and Manufacturing Company had been authorized by the State of New York to take, draw, use and lease, and sell to others to use, the waters of the Niagara River for domestic, sanitary and manufacturing purposes, and to develop power therefrom for its own use and to lease and sell to others to use for manufacturing, heating, lighting and other purposes, and that the amount of water to be diverted was to be all that could be drawn through a canal one hundred feet wide and fourteen feet deep. The amount of water thus to be diverted was estimated to be about 9,500 cubic feet per second.

The Niagara Falls Power Company was authorized, in 1886 by the State of New York, to take enough water to generate 200,000 horse-power, computed to be 17,200 cubic feet per second.

The Canadian Niagara Power Company, in 1892, and by subsequent acts of legislation of the province of Ontario, was given authority to develop 110,000 horse-power, estimated to be 9,500 cubic feet of water per second.

The Ontario Power Company, in 1902, was authorized to construct works, according to certain plans, with a capacity of 180,000 horse-power, which would require 12,000 cubic feet of water per second.

The Electrical Development Company of Ontario was incorporated in 1903, and given authority to develop 125,000 horse-power, requiring 11,200 cubic feet of water per second. The life of these charters runs from fifty to one hundred and thirty years.

In addition to the foregoing grants the New York Legislature, between the years 1886 and 1894, granted six charters to take water from the Niagara River above the Falls. Several of these charters have since expired. The companies now in operation and the amounts of water they could take under their original charters are, as follows: Niagara Falls Hydraulic Power and Manufacturing Company, 9,500 cubic feet per second; the Niagara Falls Power Company, 17,200 cubic feet per second; Canadian Niagara Power Company, 9,500 cubic feet per second; Ontario Power Company, 12,000 cubic feet per second; Electrical Development Company, 11,200 cubic feet per second, and the International Railway Company, 1,500 cubic feet per second, a total of 60,900 cubic feet per second. It will be seen by its provisions later given that the British-American treaty permits the diversion of 36,000 cubic feet per second upon the Canadian side of the river alone, and 20,000 cubic feet upon the American side, a total of 56,000 cubic feet, or only 4,900 cubic feet less than the total of the original grant.

The International Waterways Commission recommended that diversion for power purposes be limited, as follows: On the American side to 18,500 cubic feet per second; on the Canadian side to 36,000 cubic feet per second.

Following the report of the International Waterways Commission, the so-called Burton bill was enacted which became a law on June 29, 1906. Under its provisions the diversion upon the American side of the river was cut down to 15,600 cubic feet of water per second, and the Secretary of War of the United States was given authority to grant revocable permits to the power companies.

William H. Taft, afterwards President of the United States, was then Secretary of War, and after applications for permits

had been made to him, he came to Niagara Falls and gave the interested parties a hearing at the International Hotel. On January 18, 1907, Mr. Taft's opinion was given, which was the official settlement of the matter for the time being. This document contains the essential features of the Burton Law and so many other facts of momentous and historic interest, relating to the largest question of its kind in the United States and the world, that it is included herewith:

In the matter of applications under the Burton Act for the issue of permits to divert water for power from the Niagara Falls on the American side and to transmit electrical current, developed from water power on the Canadian side, into the United States.

OPINION BY THE SECRETARY OF WAR

Ten or more applications have been filed in this Department for the issuing of permits by the Secretary of War, part of them for the diversion of water for power from Niagara Falls on the American side, and the remainder for the transmission of electrical current, developed from water diverted from the Falls on the Canadian side, into the United States. These applications are filed under what is known as the Burton Act, passed June 29, 1906, and entitled "An Act for the control and regulation of the waters of the Niagara River, for the preservation of Niagara Falls, and for other purposes."

The first section of the Act forbids the diversion of water from the Niagara River, or its tributaries in the State of New York, except with the consent of the Secretary of War, as authorized in Section 2, with a proviso, the meaning of which is not here important.

The second, fourth and fifth sections of the Act, I set out in full, as follows:

"SEC. 2. That the Secretary of War is hereby authorized to grant permits for the diversion of water in the United States from said Niagara River or its tributaries for the creation of power to individuals, companies, or corporations which are now actually producing power from the waters of said river, or its tributaries, in the State of New York, or from the Erie Canal; also permits for the transmission of power from the Dominion of

Canada into the United States, to companies legally authorized therefor, both for diversion and transmission, as hereinafter stated, but permits for diversion shall be issued only to the individuals, companies, or corporations as aforesaid, and only to the amount now actually in use or contracted to be used in factories the buildings for which are now in process of construction, not exceeding to any one individual, company or corporation as aforesaid, a maximum amount of 8,600 cubic feet per second, and not exceeding to all individuals, companies or corporations as aforesaid an aggregate amount of 15,600 cubic feet per second; but no revocable permits shall be issued by the said Secretary under the provisions hereafter set forth for the diversion of additional amounts of water from the said river or its tributaries until the approximate amount for which permits may be issued as above, to wit, 15,600 cubic feet per second, shall for a period of not less than six months have been diverted from the waters of said river or its tributaries, in the State of New York; provided, that the said Secretary, subject to the provisions of section five of this Act, under the limitations relating to time above set forth, is hereby authorized to grant revocable permits, from time to time, to such individuals, companies or corporations, or their assigns, for the diversion of additional amounts of water from the said river or its tributaries to such amount, if any, as in connection with the amount diverted on the Canadian side, shall not injure or interfere with the navigable capacity of said river, or its integrity and proper volume as a boundary stream, or the scenic grandeur of Niagara Falls; and that the quantity of electrical power which may by permits be allowed to be transmitted from the Dominion of Canada into the United States, shall be 160,000 horse-power: Provided further, That the said Secretary, subject to the provisions of section five of this Act, may issue revocable permits for the transmission of additional electrical power so generated in Canada, but in no event shall the amount included in such permits, together with the said 160,000 horse-power and the amount generated and used in Canada, exceed 350,000 horse-power: Provided always, That the provisions herein permitting diversions and fixing the aggregate horse-power herein permitted to be transmitted into the United States, as aforesaid, are intended as a limitation on the authority of the Secretary of War,

and shall in no wise be construed as a direction to said Secretary to issue permits, and the Secretary of War shall make regulations preventing or limiting the diversion of water and the admission of electrical power as herein stated; and the permits for the transmission of electrical power issued by the Secretary of War may specify the persons, companies, or corporations by whom the same shall be transmitted, and the persons, companies, or corporations to whom the same shall be delivered.

"SEC. 4. That the President of the United States is respectfully requested to open negotiations with the Government of Great Britain for the purpose of effectually providing, by suitable treaty with said government, for such regulation and control of the waters of Niagara River and its tributaries as will preserve the scenic grandeur of Niagara Falls and of the Rapids in said river.

"SEC. 5. That the provisions of this Act shall remain in force for three years from and after date of its passage, at the expiration of which time all permits granted hereunder by the Secretary of War shall terminate unless sooner revoked, and the Secretary of War is hereby authorized to revoke any or all permits granted by him by authority of this Act, and nothing herein contained shall be held to confirm, establish, or confer any rights heretofore claimed or exercised in the diversion of water or the transmission of power."

The third section provides a punishment for violations of the Act, and the method of enforcing it.

The plain purpose of the Act is to restrict, as far as lies in the power of the Congress, the diversion of the water from the Niagara River above the Falls in such a way as to reduce the volume of the water going over the Falls, and the plan of Congress in so doing is to effect this purpose by directly prohibiting the diversion of water on the American side, and by taking away the motive for diverting water on the Canadian side, by denying a market for electrical power generated on the Canadian side in the United States. The prohibition in the Act is not absolute, however. It is clear that Congress wished, so far as it could, to accomplish its purpose with as little sacrifice of the pecuniary interests of those who had actually made investments, on the faith of the continued unrestricted diversion of water on the American side, or the continued unrestricted transmission of

electrical power from Canada into the United States, as was consistent with the preservation of the integrity and volume of the Niagara River passing over the Falls.

The International Waterways Commission, a body appointed under a statute of the United States to confer with a similar body appointed under a statute of Canada, to make recommendations with reference to the control and government of the waters of the Great Lakes and the valley of the St. Lawrence, have looked into the question of the amount of water which could be withdrawn on the American and the Canadian side of the Niagara River without substantial injury to the cataract as one of the great natural beauties of the world, and after a most careful examination they have reported, recognizing fully the necessity of preserving intact the scenic grandeur of the Niagara Falls that it would be wise to restrict diversion to 28,600 cubic feet a second on the American side of the Niagara River (this to include 10,000 cubic feet for the Chicago Drainage Canal), and to restrict the diversion on the Canadian side to 36,000 cubic feet a second. This report was in answer to a resolution of Congress calling for an expression of opinion, and thereupon Congress provided that the Secretary of War should be permitted, but not required, to issue permits in the first instance for the diversion of 15,600 cubic feet on the American side of Niagara River and in the Erie Canal, to persons or corporations actually engaged in the diversion of water and its use for power on that side, for six months, with leave to increase the same after six months shall have shown the effect of such diversions, if it will not affect the scenic grandeur of the Falls. Congress provided in the Act, with reference to the power generated on the Canadian side, that the Secretary of War should be authorized, but not required, to issue permits for the transmission of 160,000 horse-power from the Canadian side to the markets of the United States, and then provided that he might issue revocable permits for the transmission of a larger amount, provided that the total amount transmitted, together with that generated and used on the Canadian side, should not exceed 350,000 horse-power, or the equivalent of the diversion from the Falls of about 28,000 cubic feet of water.

I have already said that the object of the Act is to preserve Niagara Falls. It is curious, however, that this purpose as a

limitation upon the granting of permits by the Secretary of War is only specifically recited in reference to his granting of permits for diversion of additional amounts of water over 15,600 cubic feet on the American side, which are to be limited to "such amount, if any, as in connection with the amount diverted from the Canadian side, shall not interfere with the navigable capacity of said river or its integrity and proper volume as a boundary stream, or the scenic grandeur of Niagara Falls." This peculiarity in the Act is significant of the tentative opinion of Congress that 15,600 cubic feet of water might be diverted on the American side and 160,000 electrical horse-power might be transmitted from the Canadian side without substantial diminution of the scenic grandeur of the Falls. Undoubtedly Congress left it to the Secretary to reduce this total thus indicated in the matter of permits, if he differed with this intimation of the Congressional view. Acting, however, upon the same evidence which Congress had, and upon the additional statement made to me at the hearing by Dr. John M. Clark, state geologist of New York, who seems to have been one of those engaged from the beginning in the whole movement for the preservation of Niagara Falls, and who has given close scientific attention to the matter, I have reached the conclusion that with the diversion of 15,600 cubic feet on the American side, and the transmission of 160,000 horse-power from the Canadian side, the scenic grandeur of the Falls will not be affected substantially or perceptibly to the eye.

With respect to the American Falls, this is an increase of but 2,500 cubic feet a second of what is now being diverted, and has been diverted for many years, and has not affected the Falls as a scenic wonder.

With respect to the Canadian side, the water is drawn from the river in such a way as not to affect the American Falls at all, because the point from which it is drawn is considerably below the level of the water at the point where the waters separate above Goat Island, and the Waterways Commission and Dr. Clark agree that the taking of 13,000 cubic feet from the Canadian side will not in any way affect or reduce the water going over the American Falls. The water going over the Falls on the Canadian side of Goat Island is about five times the volume of that which goes over the American Falls, or, counting the total

as 220,000 cubic feet a second, the volume of the Horseshoe Falls would be about 180,000 cubic feet. If the amount withdrawn on the Canada side for Canadian use were 5,000 cubic feet a second, which it is not likely to be during the three years' life of these permits, the total to be withdrawn would not exceed ten per cent of the volume of the stream, and considering the immense quantity which goes over the Horseshoe Falls, the diminution would not be perceptible to the eye.

I have given full hearing to the American Civic Association and to others interested in the preservation of the Falls, but nothing has been brought forward that really has any evidential force, to affect the soundness of these conclusions.

By my direction, Captain Charles W. Kutz, of the Corps of Engineers, United States Army, made an investigation into the circumstances of each corporation applying for permits for diversion or transmission. The subjects upon which Captain Kutz was ordered to report are described in my memorandum opinion of July 14, 1906, as follows:

"It is necessary that the Secretary of War should know, before final action is taken by him, in the matter of permits for transmission, the capital already invested in the Canadian companies, the degree of completion of the plant, the amount likely to be sold on the Canadian side of the current, the time when the plant shall be ready for operation; the amount now actually produced; the amount now actually transmitted to the United States; the amount invested not only in the production of the current, but in the plant and machinery for its transmission, including the poles and wires, and all the details, and also the capital invested by the American companies who are to receive in the first instance the current thus produced; the form in which that capital is, and the contracts into which they have entered both with the Canadian companies and with the companies or persons to whom they expect to sell the current; the date of these contracts, and all the circumstances tending to show the extent of the injury that a refusal to grant the permits requested would cause to the investment of capital, together with the question of when the contracts were made upon which the claims for the use of current are based, with a view to determining the good faith with which these contracts were entered into; and whether the threatened passage of law induced their making."



CAVE OF THE WINDS IN SUMMER



CAVE OF THE WINDS IN WINTER

Captain Kutz has made a report both with respect to the companies applying for permits on the American side and those applying for permits on the Canadian side, and I wish to express my great satisfaction at the thoroughness and spirit of judicial fairness with which Captain Kutz and those who are associated with him have done their work.

Taking up first the applications for permits for diversion on the American side, there is no room for discussion or difference. The Niagara Falls Power Company is now using about 8,400 cubic feet of water a second and producing about 76,630 horse-power. There is some question as to the necessity of using some water for sluicing. This must be obtained from the 8,600 cubic feet permitted, and the use of the water for other purposes when sluicing is being done must be diminished. The Niagara Falls Hydraulic Power and Manufacturing Company is now using 4,000 cubic second feet, and has had under construction for a period long antedating the Burton Act a plant arranged to divert 2,500 cubic second feet and furnish 36,000 horse-power to the Pittsburgh Reduction and Mining Company. A permit will, therefore, issue to the Niagara Falls Hydraulic Power and Manufacturing Company for the diversion of 6,500 cubic second feet, and the same rule must obtain as to sluicing as already stated.

As the object of the Act is to preserve the scenic beauty of Niagara Falls, I conceive it to be within my power to impose conditions upon the granting of these permits, compliance with which will remedy the unsightly appearance that is given the American side of the canyon just below the Falls on the American side where the tunnel of the Niagara Falls Power Company discharges, and where the works of the Hydraulic Company are placed.

The representative of the American Civic Association has properly described the effect upon the sightseer of the view toward the side of the canyon to be that of looking into the backyard of a house negligently kept. For the purpose of aiding me in determining what ought to be done to remove this eyesore, including the appearance of the buildings at the top, I shall appoint a committee consisting of Charles F. McKim, Frank D. Millet and F. L. Olmsted, to advise me what changes at an expense not out of proportion to the extent of the investment

can be made which will put the side of the canyon at this point from bottom to top in natural harmony with the Falls and the other surroundings, and will conceal as far as possible the raw commercial aspect that now offends the eye. This consideration has been kept in view in the construction of works on the Canadian side and in the buildings of the Niagara Falls Power Company above the Falls. There is no reason why similar care should not be enforced here.

Water is being withdrawn from the Erie Canal at the lake level for water-power purposes, and applications have been made for permits authorizing this. Not more than 400 cubic feet is thus used in the original draught of water that is not returned to the canal in such a way as not to lower the level of the lake. The water is used over and over again. It seems to me that the permit might very well be granted to the first user. As the water is taken from the canal, which is State property, and the interest and jurisdiction of the Federal government grew out of the indirect affect upon the level of the lake, the permit should recite that this does not confer any right upon a consumer of the water to take the water from the canal without authority and subject to the conditions imposed by the canal authorities, but that it is intended to operate, and its operation is limited to confer, so far as the Federal government is concerned, and the Secretary of War is authorized, the right to take the water and to claim immunity from any prosecution or legal objection under the fifth section of the Burton Act. I shall refer the form of the permit with these directions to the International Waterways Commission to prepare it.

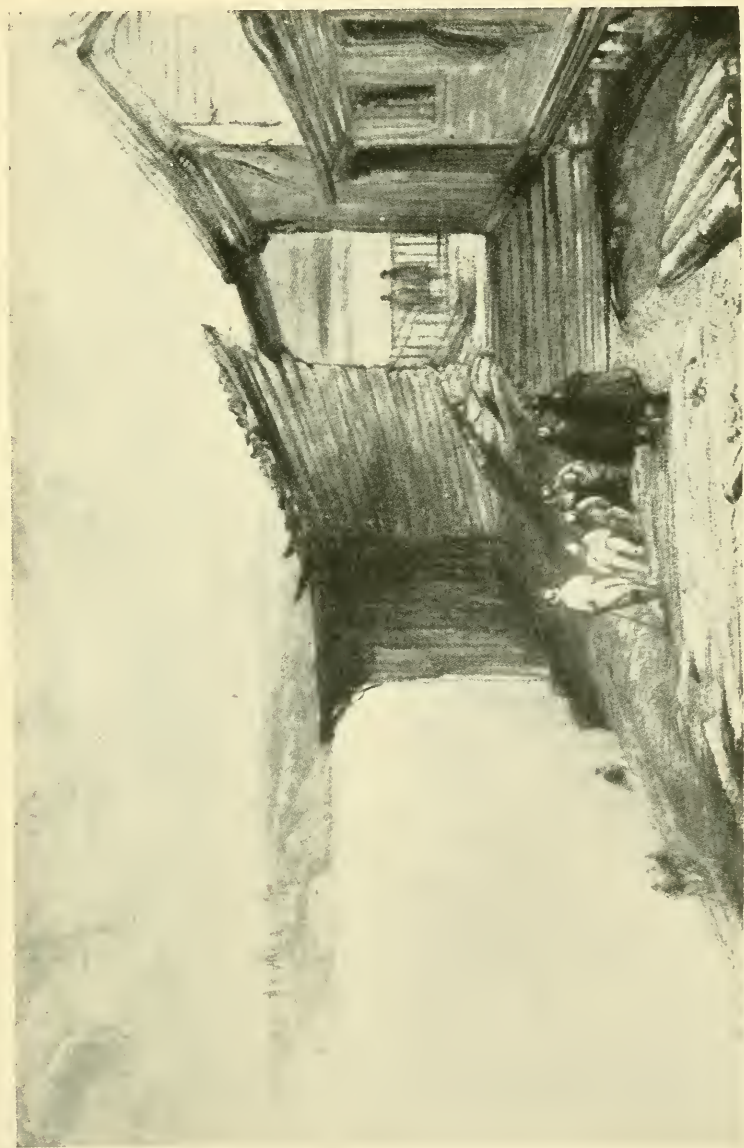
I come now to the question of the permits to be granted to the applicants for the right to transmit electrical current from plants generating it on the Canadian side from the Niagara River.

The applicants are four: The International Railway Company, which applies for a permit for 8,000 horse-power; the Niagara, Lockport and Ontario Company, speaking in its own interest and that of the Ontario Power Company, for 90,000 horse-power; the Electric Transmission Company, speaking for itself and the Electrical Development Company, for 62,500 horse-power; and the Niagara Falls Power Company, speaking for the Canadian Niagara Power Company, for 121,500 horse-power.

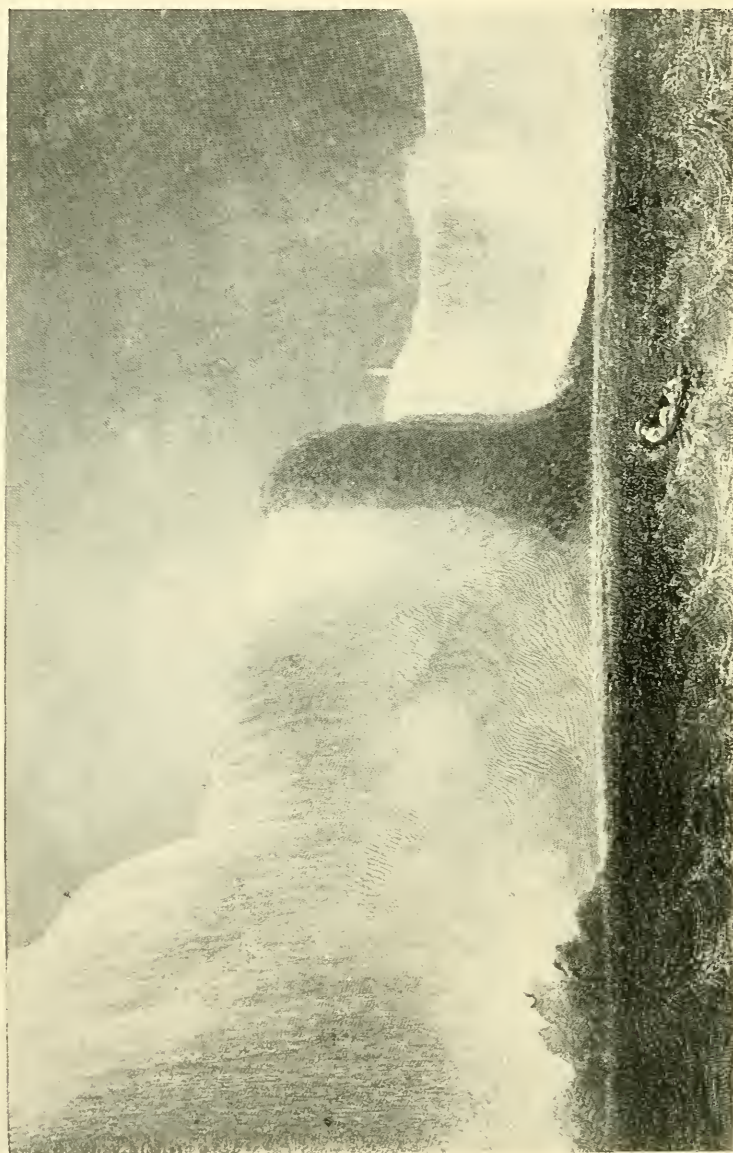
Captain Kutz recommended that the International Railway Company be not granted any permit, but that out of the 160,000 horse-power, 2,500 be reserved in order that it might be granted to the International Railway Company when that company shall have obtained permission from the Commissioners of the Queen Victoria Niagara Park to transmit the current through the park. The question of the company's right is pending before the Dominion government. Some years prior to 1901, this Railway Company, which owns all the railways in Buffalo and neighboring cities and towns, bought a Canadian electric railway running from Chippewa to Queenston, together with a bridge just below the Falls, and one at Lewiston, so as to make a loop with the railways on the American side. For this Canadian railway the applicant paid \$1,333,000. It had a small power plant located in the Queen Victoria Park, and under its charter it could only use power generated therefrom to run the Canadian railway. In 1901 this charter was amended so as to permit the use of electricity for its railroads on both sides, and the plant has been developed by the expenditure of \$265,000, so that now it can generate 3,600 horse-power. The effective head is sixty-eight feet, so that it takes about twice as much water to develop this power per horse as in the great plants I shall hereafter describe. It is quite clear that the original investment in the purchase of the railway was not made to secure the transmission of electric power across the boundary, because there was no power to do so under the charter. The subsequent investment of \$265,000 can perhaps be said to have been made with this in view. Captain Kutz recommended that 2,500 horse-power be reserved for this company. The Commissioners of Queen Victoria Park refused to approve the plans of this company for a transmitting line to the boundary, so that it cannot now use the electricity except on the Canadian line, where it uses 1,200 horse-power. It generates now 3,600 horse-power. The permit of 2,500 horse-power would effect a saving of \$30,000 a year. The investment for transmission to the United States does not exceed \$265,000. All that can be reasonably expected from the outlay under the circumstances is not to exceed seven per cent on the remainder, or about \$18,000. The permit should not, therefore, issue for more than three-fifths of 2,500 horse-power, or 1,500 horse-power. The fact that it may generate

8,000 horse-power by the expenditure of \$150,000 I do not regard as important, and I carry out the purpose of Congress in taking away any motive for making such an investment. The amount of 1,500 horse-power will be reserved to await the decision of the Dominion government in the controversy between the International Railway Company and the Commissioners of Queen Victoria Park. This leaves out of the 160,000 horse-power 158,500 horse-power to be distributed to the other three companies. Let us consider their financial status and prospects.

The Ontario Power Company was incorporated in 1887, and there was no limitation to its charter upon the amount of power which it might generate. Its plans, however, were subject to the approval of the Commissioners of the Queen Victoria Park, and plans for its works have been approved for 180,000 horse-power. The head works for this amount have been constructed and located above the first line of rapids. It was necessary under the plans to construct three conduits through the park. Only one of these conduits has been constructed, and it has a capacity to supply six generating units, three for 10,000 horse-power each and three of 12,000 each, or 66,000 horse-power in all. The cost to complete the six units and thus produce 66,000 horse-power is \$6,500,000. The amount required to complete the plant to the projected size, producing 180,000 horse-power would be \$6,500,000 additional; and the amount required to produce 120,000 horse-power would be about \$3,200,000. In addition to this, the Ontario Transmission Company, an auxiliary company to the main power company, has expended about \$1,000,000 in transmission, right of way and plant, and the power company has entered into contracts for the furnishing of 6,000 horse-power with an option by the purchasers to increase this to 13,000 for Canadian consumption. The Niagara, Lockport and Ontario Company of New York is affiliated with the Ontario Power Company, and it has constructed a very elaborate transmission plant from the international boundary to Lockport, from Lockport to Buffalo, and from Lockport by way of Rochester to Syracuse. It has expended \$2,785,000, of which \$1,200,000 was for right-of-way and \$1,062,000 for construction. Its capacity for transmission from the International boundary to Lockport is 60,000 horse-power, and there is the same capacity from Lockport to Buffalo; from Lockport



THE FIRST BUILDING ERECTED IN PROXIMITY TO NIAGARA FALLS, STANDING ON THE CANADIAN SIDE OF RIVER



NIAGARA FALLS FROM THE FERRY

to Syracuse it has a capacity of 10,000 horse-power, and a second line of greater capacity is under construction. It claims that its investment will amount, when its transmission lines are completed, to upwards of \$4,000,000, and certainly the expenditure will reach \$3,000,000.

The Electrical Development Company received a charter, 5 Edward VII, and was authorized to take 125,000 horse-power, or 8,000 cubic feet a second. The head works, wheelpit and tail race have been completed for eleven units of 12,500 horse-power each. The power house has been completed for seven units, but the machinery installed and contracted for is only for four units. The completion of the four units will involve the expenditure of \$6,300,000, and it may be increased to eleven units, or 132,000 horse-power, by the expenditure of \$1,576,000. This company has erected a transmission plant to Toronto, which will convey 20,000 horse-power, and that will involve an expenditure when completed of \$2,610,000. The demands for Canadian consumption which this company will satisfy are about 30,000 horse-power. There is an electrical transmission company of American origin and charter affiliated with this company, which has expended about \$246,000 and has a relation to what is called the Nicholl Syndicate, which owns interests in gas and power companies and in an electric railway from Buffalo to Rochester, which is under construction. It has franchises in its own name in seven towns and cities, but the enterprise is largely inchoate and the investment is in prospect rather than actual.

The Canadian Niagara Power Company was organized in 1892 by the same persons who were interested in the Niagara Falls Power Company, the pioneer of electric power companies on the American side. It is not limited in the quantity of power which it is to use and its plans are subject to the approval of the Commissioners of the Queen's Park. Plans have been approved for 120,000 horse-power, which means eleven units of 11,000 horse-power with one of these as a "spare," which makes its normal capacity 110,000. Its head works, wheel pits and tail race tunnel are completed for the full development. Five units have already been installed and its power house and transformer have been completed for five units. It has cost \$5,550,000, and to make eleven units would cost \$1,250,000 more. It has

an underground conduit connecting the Canadian plant with the American plant of the Niagara Falls Power Company, with a capacity of 128,000 horse-power transmission, with cables in it of the capacity of 32,000. It has a separate transmission line sixteen miles along the Niagara River to Fort Erie, with towers to carry the lines across the river, all of which transmission plant cost \$434,000. It sells in Canada 1,340 horse-power, with an option to purchasers to take 4,237 horse-power.

From what has been said it will be seen that the Ontario Power Company has now invested or under contract \$6,500,000, which will produce 66,000 horse-power; that it and its affiliated companies have expended \$1,000,000 for transmission in Canada, and about \$3,000,000 for transmission in the United States.

That the Electrical Development Company has invested \$6,300,000, which will produce 50,000 horse-power; and a transmission line in Canada of \$2,500,000, and perhaps \$300,000 in transmission lines in the United States.

That the Canadian Niagara Power Company has invested \$5,350,000, which will produce 55,000 horse-power, and \$500,000 in transmission lines in the United States.

Captain Kutz recommended the allowance to the Ontario Power Company of a permit for 60,000 horse-power; to the Canadian Niagara Falls Power Company the same amount, 60,000 horse-power; to the Electrical Development Company, 37,500.

I think the Ontario Company is entitled to a larger allowance than the other two companies, because it generates 11,000 horse-power more than the Canadian Niagara Power Company, and 16,000 horse-power more than the Electrical Development Company. It has invested \$200,000 more in its power plant than the Electrical Development Company and \$1,200,000 more than the Canadian Niagara Power Company. It uses for the production of one unit of horse-power perhaps fifteen per cent less of water than the other two companies. But more than all, it has expended \$3,000,000 in a transmission line from the international boundary to Rochester, Syracuse, Lockport and Buffalo. This investment is almost wholly dependent for use and profit on the importation of electricity from Canada. Captain Kutz reports that 60,000 horse-power will enable the company to secure a reasonable return on the transmission invest-

ment after paying a proper amount for the power at the boundary. This would leave to be divided between the other two companies 99,000 horse-power, and objection is made to this discrimination against them in favor of the Ontario Power Company because their plants are so arranged that by the expenditure of a million and a quarter the Niagara Company could increase its output to 110,000 horse-power and by the expenditure of a million and a half the Development Company could increase its output to 130,000 horse-power, whereas the Ontario Company must expend \$6,500,000 more to reach its full capacity of 180,000 horse-power, or about \$3,200,000 to reach a capacity of 130,000 horse-power. While this circumstance is entitled to some weight against proportioning the allowances to the capital actually expended on the power plants or the horse-power now produced from the present installations, still I think the considerations already suggested, especially the special expenditure for long-distance transmission, really outweighs everything else in requiring that, if possible, a sufficient amount be allowed to pay a reasonable profit on that investment which is wholly dependent on transmission.

Coming now to the division between the Niagara Falls Company and the Development Company, the conclusion is not so easy. The Development Company has invested about three-quarters of a million more on its power plant than the Niagara Company, but under its present installation it cannot produce as much horse-power by 5,000. It has expended \$2,500,000 to carry horse-power to Toronto and has contracts for 10,000 more. The Canadian business does not pay as well as the American business, especially that of the Niagara Company, which is quite profitable under its existing contracts. Considering these contracts, it seems to me that with its slight cost of transmission and the advantageous situation that it enjoys in respect to its affiliated American Company, an allowance of 52,500 horse-power for the Niagara Company will enable it to fulfill all its probable demands at a good profit. The works across the river produce 76,300 horse-power, and adding 52,500 horse-power makes 128,800 horse-power. The American company now earns nine per cent on its stock of \$4,000,000 and interest on a bonded indebtedness of \$9,000,000. It has contracts requiring a maximum of 102,000 horse-power, but the call

on its capacity has never exceeded 85,000 horse-power because the calls do not coincide. On the capital invested, there is no likelihood that the Niagara Company will suffer a loss. It will not make as much as it would have made had it been allowed to transmit its full capacity after building the contemplated additions to its installation, but the act only intended to save the investors from losses on the plant actually invested, not to compensate them for prospective gain.

This leaves for the Electrical Development Company 46,500 horse-power to transmit to the United States after producing 30,000 horse-power and transmitting it to Toronto and elsewhere. This would justify the company in increasing the number of units in its installation if it could secure transmission to the United States. It is probable that the amount is not enough to justify the elaborate outlay required for transmission to American customers, and this reduces the value of the permit; but I cannot think that it will not be able to arrange for the disposition of transmissible current at the boundary at such figures as to be profitable, even if the amount it makes per horse-power be less than that which the two American companies realize, because of their greater facility for reaching customers, the one through the Rochester transmission plant and the other through the American Niagara Company's plant and good will. Under this arrangement and allotment the Canadian Company becomes the only one which, assuming a demand for its American delivery, will be justified in increasing the capacity of its power plant by installing more units. The demand in Canada for the product of the Ontario and Niagara companies may grow some, but not very much, so that they are likely to be confined to their present installation.

Before closing I ought to notice a claim of the Niagara Company that it has by its charter a preferential right over the other two companies, so that it ought to be allowed its full 110,000 horse-power for transmission before the other two companies receive permits to transmit any current at all. The preference claimed is really only a priority in taking water from the river, and cannot be reasonably extended to apply to rights to transmit current when there is no lack of water for all.

The Niagara Falls Power Company, and its Canadian other self ask that the two permits to them shall contain a provision

by which in case of a reduction of the amount of water diverted on the American side below the permitted limit, a corresponding increase beyond the limit permitted on the Canadian side may be authorized. This privilege must be denied. The American diversion and the Canadian transmission must be kept separate in the permits and should be absolute and not variable. It would form an uncomfortable precedent in other cases.

It has been asserted by persons who profess to have information that the three companies here seeking permits are looking forward to an amalgamation of interests or a combination for the purpose of keeping up the prices of electrical power by avoiding competition that will deny to the public the benefit it is entitled to enjoy from the natural water power that these companies use at comparatively small benefit to any one of the governments which authorize its use. This is denied by the applicants. Just what effect the existence of such a combination ought to have to require a revocation or modification of these permits is a matter of grave doubt; but should evidence in proper form of the existence of such a combination be brought to me as a ground for the modification of the action now taken, it will be given a careful consideration.

The order for permits will therefore be for

The International Railway Company	1,500
The Ontario Power Company.....	60,000
The Canadian-Niagara Falls Power Company	52,500
The Electrical Development Company	46,000

The Chief of Engineers and Captain Kutz will prepare the permits after consultation with counsel for the respective companies. An order should also be entered detailing Captain Kutz to report a plan for the supervision of the operation of these companies under the permits, with a view to secure strict compliance with their terms.

(Signed) WM. H. TAFT,
Secretary of War.

January 18, 1907.

CHAPTER XI

THE BRITISH-AMERICAN TREATY

Text of the Important Historic Document Executed by Secretary of State Elihu Root and Ambassador James Bryce, Relating to the Niagara Diversion Question. New York State Lays Claim to Jurisdiction

THE Burton Law was limited to three years from June 29, 1906, the date of its approval, and pending negotiations for a treaty.

On March 3, 1909, the treaty not having been proclaimed, the law was continued in force by the second session of the Sixtieth Congress for two years, and again on August 22, 1911, it was extended until March 1, 1912, when it was a third time extended by resolution to March 4, 1913, at which date it finally lapsed, and various measures have since been introduced into and considered by the Congress.

The Burton Law requested the President of the United States to open negotiations with the government of Great Britain for the purpose of effectually providing a suitable treaty for the regulation and control of the waters of Niagara River and its tributaries, as would preserve the scenic beauty of Niagara Falls. Acting upon the request expressed in the Burton Law, the President opened negotiations with Great Britain for the purpose of defining by treaty their respective rights in the Niagara River as a boundary stream, and for other purposes. This treaty was proclaimed May 13, 1910, to remain in force five years and thereafter until terminated by twelve months' notice, given by either of the high contracting parties to the other.

The Niagara power question has been considered for years by the Committee on Rivers and Harbors, and the Committee on Foreign Affairs of the House of Representatives, and Congress

has given many hearings upon the subject, which have been attended by representatives of the power companies, users of power, holders of power-development charters, the American Civic Association, public officials of Niagara Falls and of the State of New York, the claim of state jurisdiction over the waters of Niagara River on this side of the international boundary having been strongly presented in the past two or three years. The attitude of the committee of Congress is stated to be that it believes that the jurisdiction of the Federal government over the Niagara River, once asserted in conjunction with the Dominion of Canada under treaty relations, is unquestionable and paramount, that it is the duty of the Federal government to assume complete and permanent jurisdiction of the boundary waters between the two countries, subject only to the incidental rights of the riparian owners when these rights do not conflict with such federal authority. The Congressional Committee assumes that under the constitutional power to take jurisdiction for navigation and commercial purposes, such authority is inclusive of the further jurisdictional rights because the Niagara River is a boundary stream and navigable, and a means of national defense. The statement is made that involved as Niagara is, with the Great Lakes and other boundary streams which, together, constitute more than 1,000 miles of these boundary waters, it is difficult to discern why exclusive control of these boundary waters ought not to exist in the Federal government.

In the past few years, the state of New York has laid claim to control of and proprietary interest in the waters of the Niagara River on this side of the boundary line and made the contention that further diversion should run to the State of New York.

Governor John A. Dix first discussed this matter in a message, and at that time William Sulzer, a representative in Congress from this state, was chairman of the Committee on Foreign Affairs of the lower house which is dealing with the question.

Afterwards, Mr. Sulzer became governor, and was succeeded by Martin H. Glynn who, with Attorney-General Thomas Carmody, went to Washington and made an argument before the Committee in favor of the New York position. During the administration of Charles S. Whitman who succeeded Governor Glynn, a committee of the Legislature, headed by Senator George F.

Thompson of the Niagara and Orleans County district, made a thorough investigation of water power development. The Committee held hearings in Niagara Falls and New York, and also made trips to Sault Ste Marie and down the St. Lawrence River. A great mass of information was collected, and the attitude of the committee was distinctly in favor of a larger diversion, owing to the undoubted demand for more electrical power and the convincing proof that a much larger diversion could take place without appreciably affecting the scenic grandeur of the Falls or River.

Now pending in the first session of the Sixty-fourth Congress and known as H. R. 3038, is a measure for the control and regulation of the waters of Niagara River similar to that reported by the Committee on Foreign Affairs of the Sixty-third Congress. Those opposed to the contention of the federal authorities say that the proposed legislation is unwise and that the course of federal conduct in reference to the power situation at Niagara has been unfair to American interests.

When the British-American treaty was enacted, representations were made to the State Department by each of the power companies at Niagara Falls, N. Y., requesting that in the making of this treaty sufficient diversion be allowed upon the American side to enable the plants of the American companies to complete their proposed development. It was also called to the attention of the State Department that the effect of our inelastic maximum limit of diversion was actually to reduce the use and diversion of water to a considerably less amount than the maximum fixed. For instance, it was pointed out that if the companies were to be subjected to heavy penalties for a diversion for an instant of time in excess of either respective allotted amounts, and the ascertainment of such diversion was to be based upon measurement of output of electric current by them or their tenant customers, the permittees must necessarily keep their actual diversion considerably below the allotted amounts, since one of their tenant customers could by suddenly increased use lift the apparent diversion beyond that permitted by the Federal government; that some elasticity in this regard was important either (*a*) by a system of daily averages, or (*b*) by permitting an apparent excess in use for a short period of time, and until such apparent excess use could be reduced below the amount allotted has been fre-

quently suggested, and the language of the treaty in this respect was as follows: "not exceeding in the aggregate a daily diversion at the rate of 20,000 cubic feet per second." Notwithstanding the treaty provisions allowing a diversion of 20,000 cubic feet per second on the American side, no increased diversion has been permitted by the Federal government, although about seven years have elapsed since the treaty was ratified. It is also pointed out that the water used by all of the power companies on the American side of the river is drawn from the Grass Island pool, so-called, and the American fall is little affected by such withdrawal, inasmuch as only five per cent of the water of the river passes over that fall. In other words, the total flow of the river is estimated at 222,000 cubic feet per second and therefore only 11,000 cubic feet of water per second passes over the American fall. It is also pointed out that at any rate, the British-American treaty has been ratified and it provides that 36,000 cubic feet of water per second can be diverted on the Canadian side as against 20,000 cubic feet on the American side, which amount is restricted by the War Department to 15,600 cubic feet per second. It is further pointed out that the effect of such restriction by the American authorities is to force manufacturing interests into Canada that would otherwise locate in the United States, and further, that the water is used with greater efficiency on the American side.

The great European war has emphasized the tremendous necessity for a far greater use of the water powers of America. Power is necessary for the manufacture of munitions of war, whether to be sent abroad or for preparedness in America, and great quantities of electric power are required for the making of chemicals and other articles and substances once made in Europe and now made, and to be made, in the United States. In this connection it is well known that most of the power developed and used at Niagara Falls is utilized in electro-chemical processes, nearly all of which are of much importance in the manufacture of munitions of war. To mention a few and their uses, the following are named: Aluminum, which is necessary for steel manufacture, motor cars and trucks, aviation materials and ammonal; carbide, the company's plant being available for use in the manufacture of nitric acid and ammonia, and actually used to produce calcium carbide for lighting, acetylene gas, the

product of carbide, being used to cut the battleship *Maine* in two before it was raised from Havana Harbor, to weld together the broken shaft of a battleship in thirty-six hours, where it would take six weeks to do it by the old method, and to also illuminate coal mines and beacon lights at sea; potash, used in the manufacture of explosives; caustic soda, which is convertible into picric acid for use in explosives; ferro-silicon and titanium alloys, which are vital necessities in armor plate, tool steel and gun materials; abrasives, necessary in the manufacture of armament, shrapnel and projectiles, and chloro benzole, which enters into the manufacture of gun powder.

Besides the reasons already advanced for a further diversion of the waters of the Niagara River on the American side, for the development of power, especially when the international treaty permits an additional 4,400 cubic feet per second of water to be taken, and most people who are familiar with the situation are convinced that a much larger diversion could be made without appreciably effecting the scenic grandeur of the Cataracts or Rapids of the Niagara, it is stated that, while the possibility of a war between the United States and Great Britain may be eliminated, it is quite clear that the Dominion government would have the legal authority at any time to cut off exportation of power from Canada, and in fact, at the present time such exportation is actually made, only under annual licenses. There is no method by which the United States government can commandeer, in case of necessity, a power development in Canada, and yet the greater power development at Niagara Falls has now been made in Canada, and the Federal government will not even yet permit the 20,000 cubic feet per second, specified in the treaty, to be used on the American side, but still limits the American diversion to 15,600 cubic feet, the amount specified in the Burton Act which, upon its face, was a temporary makeshift as will be seen by reference to sections four and five of that act, as printed in Secretary Taft's opinion elsewhere in this book.

Upon the subject of the alleged menace to the scenic grandeur of Niagara Falls by the power developments, Major Charles Keller, of the United States Corps of Engineers, who has made numerous trips to Niagara Falls and who made an investigation as an engineer, said in a report to the War Department:

"The 'navigable capacity' of the Niagara River is dependent

upon its depth and velocity, and these are measurable elements. Its 'integrity and proper volume as a boundary stream' are questions of fact which can be determined from measurements of discharge and from suitable surveys. The 'scenic grandeur of Niagara Falls appears, on the other hand, to be dependent upon opinion and sentiment, and it seems almost absurd to attempt to demonstrate, by physical measurements of any kind, what the effect of the above diversion, or of any diversion, will be upon the Falls, considered solely as a spectacle."

Upon the same subject and from the great mass of material in the government reports can be quoted this statement by Francis C. Shenehon, principal assistant engineer, who is also dean of engineering of the University of Minnesota: "It is only fair to state, because of some erroneous views held concerning the injury already wrought on the Falls by diversions, that during the decade, 1899 to 1908, for the months of June to October, inclusive, the Falls have had a fullness of volume and consequent grandeur barely less than that of the prior decade, 1889 to 1898; and this is because the surplus waters actually tributary to the Niagara River have been a little greater in the latter decade than in the preceding, offsetting all the diversions above the head of the River and practically compensating those at the Falls." And Mr. Shenehon further says that, "In the latter decade the American Fall has had a greater flow than in the former decade."

Those who are opposed to federal regulation and in favor of the State of New York having jurisdiction over the waters of the Niagara River on the American side, say that the proposed legislation by Congress is specifically objectionable, upon the following grounds:

1. It is an effort by the Federal government to exercise those sovereign and proprietary rights in respect to water powers that belong by law and by right to the state, and particularly an effort to invade the sovereign rights of the State of New York. This view has been expressed and elaborated upon by the attorney-general of the state on various occasions, reference being particularly had to the statement of the Honorable Thomas Carmody, on Tuesday, January 23, 1912, before the Committee on Foreign Affairs, as well as to the minority report of Mr. Levy in the Sixty-second Congress in respect of H. R. 28674, report 1488, in which the opinion is expressed that the Federal government has no con-

trol over the Niagara River except for the purposes of navigation and national defense. A reference to the authorities recited in Mr. Levy's report is of much interest.

2. The proposed legislation might have the effect of placing a cloud upon the legal title and rights of the power companies and disturb their security holders who have invested their money upon the faith and credit of state legislation and adjudicated rights.

3. The proposed legislation may have for its ultimate purpose the injury or destruction of the property of the existing companies under the pretense and guise of protecting federal interests; to wit, navigation and defense which are in no wise threatened.

4. The proposed legislation still limits the diversion on the American side of the river to 15,600 cubic feet per second, notwithstanding that the treaty admits of a diversion of 20,000 cubic feet per second.

5. The proposed legislation limits the diversion on the American side to the maximum, instead of using the language of the treaty; to wit, "the aggregate daily diversion at the rate of 20,000 cubic feet per second."

6. The proposed legislation is an attempt of the Federal government to embark in works of power construction, rate making, and a control of intra-state property in a manner neither heretofore attempted, justified by the theory of the Federal constitution, nor likely in any manner to be beneficial to the people.

7. The penalties proposed by the legislation are excessive.

These are the two sides of the case presented, the Federal and the state. The question of the effect of these diversions upon the scenic grandeur of the Niagara River has been discussed and considered at length, and the treaty between the two nations which is the highest expression of their judgment on this subject, is to the effect that diversions to the amount of 56,000 cubic feet of water per second, or twenty-five per cent of the total flow of the Niagara River, would not injuriously affect its scenic grandeur. It is obvious that it can make little difference upon the eye of the spectator whether the depth of the water at the crest of the Falls is eleven feet or nine feet. It is set forth that a fair and unbiased view of those who have given the matter consideration is that there has been no apparent diminution in the grandeur of the Falls as a spectacle, and that so far as the matter in respect of which the Federal government is interested: to wit, injury to

navigation and danger to national defenses, the diversions allowed under the treaty would not have any appreciable effect.

Great benefits have come to mankind from the power development already installed at Niagara Falls, where a large body of ever-flowing water may be utilized in power development under as favorable circumstances as are known to civilized man. The great advantages which have come through the utilization of these waters, in the lighting of towns, villages and cities at moderate rates; in the manufacture of products necessary and beneficial for the use of mankind, the marketing of which without cheap continuous power of Niagara would be impossible, must appeal to the rational minded, and it is a mere truism to say, "it was never intended in the economy of an all-wise Providence that while men's backs were bowed in labor the great potential energy of the waters of the Falls of Niagara should flow unused to the sea."

It would seem that a wise and intelligent view of the Congress of the United States would lead to legislation to protect and recognize the worth of the courageous and far-sighted men and women who have contributed their time, energy and brains, as well as their savings, to the development of the great work at Niagara Falls. Dependent upon the preservation of these waters are hundreds of millions of capital, and the comfort and livelihood of hundreds of thousands of persons. The short-sighted policy of the American government has now resulted in a power famine on the American side of the Niagara River, and the Buffalo General Electric Company is engaged in the erection of a steam plant with a proposed immediate installation of approximately 80,000 electric horse-power to take care of the electric service in Buffalo alone. It appears from Bulletin No. 416 of the U. S. Geological Survey, that a steam plant requires 4.55 pounds of coal to produce one electric horse-power. On this basis, this 80,000 electric horse-power, continuous, represents a coal equivalent of 1,616,000 tons per annum.

It has been suggested from time to time, both to state and Federal governments and committees that the undertaking of remedial works would not only prevent any possibility of injury to navigation through diversion of the waters for power purposes at Niagara, but would also actually increase the beauty of the Falls at their crest. An investigation of the possibilities, details

and costs of such remedial works, and legislation looking toward the construction of the same upon some equitable arrangement of costs, would seem to be wise, conservative legislation and substantially beneficial to the age in which we live.

The treaty between the United States and Great Britain, relating to the boundary waters between the United States and Canada, was signed at Washington January 11, 1909; its ratification advised by the Senate March 3, 1909; ratified by the President April 1, 1910; ratified by Great Britain March 31, 1910; ratification exchanged at Washington May 5, 1910, and proclaimed May 13, 1910, and was to remain in force five years and thereafter until either of the high contracting parties gives one year's notice that its termination is desired. No such notice has yet been given. This treaty was executed by the President of the United States and Elihu Root, Secretary of State, and by His Britannic Majesty and the Right Honorable James Bryce, O. M., ambassador extraordinary and plenipotentiary at Washington. The document provides that "for the purpose of this treaty boundary waters are defined as the waters from main shore to main shore of the lakes and rivers and connecting waterways, or the portions thereof along which the international boundary between the United States and the Dominion of Canada passes, including all bays, arms and inlets thereof, but not including tributary waters which in their natural channels would flow into such lakes, rivers and waterways, or water flowing from such lakes, rivers and waterways, or the waters of rivers flowing across the boundary."

Article V of the treaty, pertaining particularly to the Niagara River, reads:

"The high contracting parties agree that it is expedient to limit the diversion of waters from the Niagara River so that the level of Lake Erie and the flow of the stream shall not be appreciably affected. It is the desire of both parties to accomplish this object with the least possible injury to investments which have already been made in the construction of power plants on the United States side of the river under grants of authority from the State of New York, and on the Canadian side of the river under licenses authorized by the Dominion of Canada and the province of Ontario.

"So long as this treaty shall remain in force, no diversion of the waters of the Niagara River above the Falls from the natural

course and stream thereof shall be permitted except for the purposes and to the extent hereinafter provided.

“The United States may authorize and permit the diversion within the State of New York of the waters of said river above the Falls of Niagara for power purposes, not exceeding in the aggregate a daily diversion at the rate of 20,000 cubic feet of water per second.

“The United Kingdom, by the Dominion of Canada, or the province of Ontario, may authorize and permit the diversion within the province of Ontario of the waters of said river above the Falls of Niagara, for power purposes, not exceeding in the aggregate a daily diversion at the rate of 36,000 cubic feet of water per second.

“The prohibitions of this article shall not apply to the diversion of water for sanitary or domestic purposes, or for the service of canals for the purposes of navigation.”

The treaty provides for the establishment and maintenance of an international joint commission of the United States and Canada, composed of six commissioners, three from each country. Under Article VIII, which reads as follows, the rules governing the commission are set out:

“This International Joint Commission shall have jurisdiction over and shall pass upon all cases involving the use or obstruction or diversion of the waters with respect to which under Articles III and IV of this treaty the approval of this commission is required, and in passing upon such cases the commission shall be governed by the following rules or principles which are adopted by the high contracting parties for this purpose:

“The high contracting parties shall have, each on its own side of the boundary, equal and similar rights in the use of the waters hereinbefore defined as boundary waters.

“The following order of precedence shall be observed among the various uses enumerated hereinafter for these waters, and no use shall be permitted which tends materially to conflict with or restrain any other use which is given preference over it in this order of precedence:

“(1) Uses for domestic and sanitary purposes;

“(2) Uses for navigation, including the service of canals for the purposes of navigation;

“(3) Uses for power and for irrigation purposes.

“The foregoing provisions shall not apply to or disturb any existing uses of boundary waters on either side of the boundary.

“The requirement for an equal division may in the discretion of the commission be suspended in cases of temporary diversions along boundary waters at points where such equal division cannot be made advantageously on account of local conditions, and where such diversion does not diminish elsewhere the amount available for use on the other side.

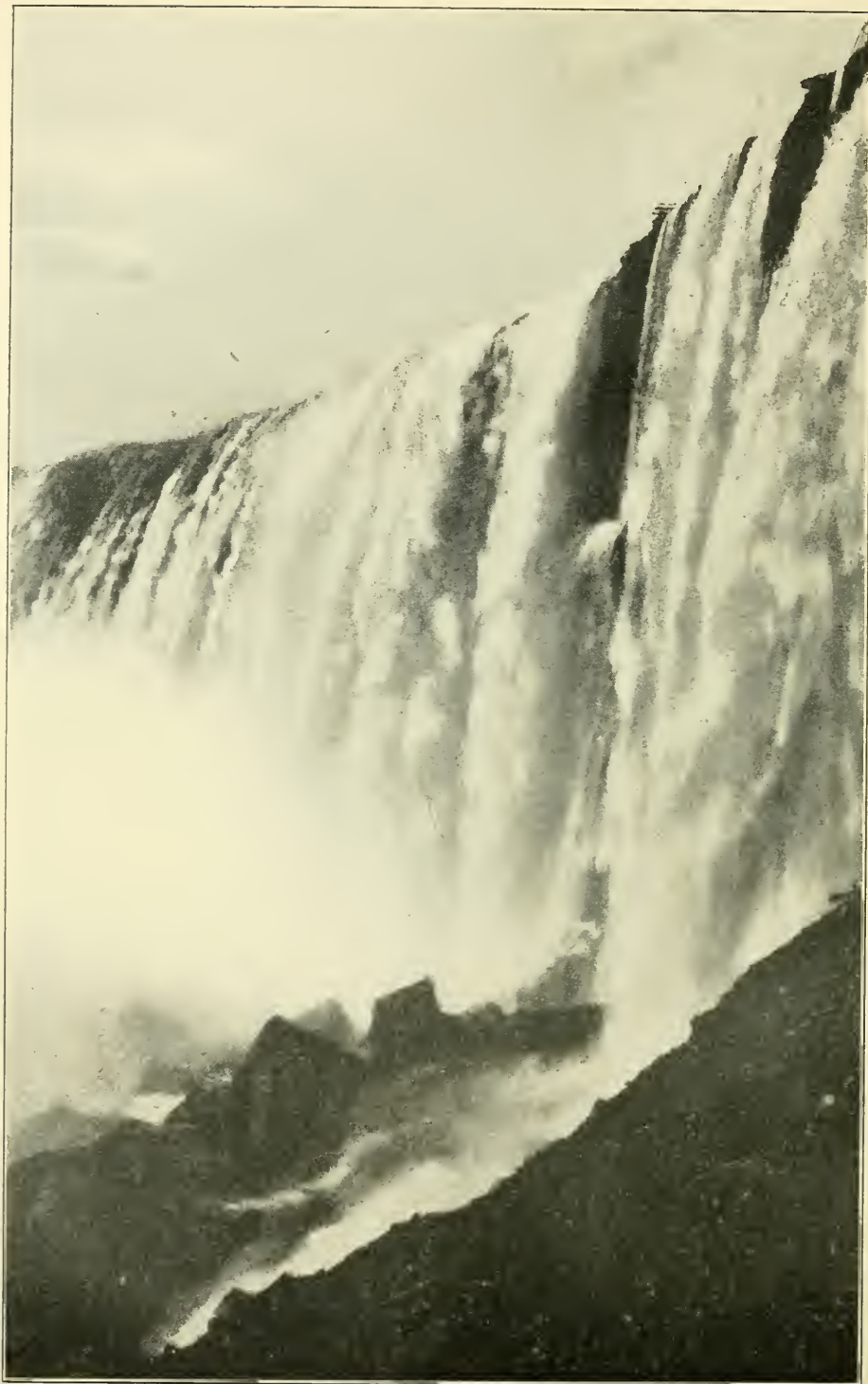
“The commission in its discretion may make its approval in any case conditional upon the construction of remedial or protective works to compensate so far as possible for the particular use or diversion proposed, and in such cases may require that suitable and adequate provision, approved by the commission, be made for the protection and indemnity against injury of any interests on either side of the boundary.

“In cases involving the elevation of the natural level of waters on either side of the line as the result of the construction or maintenance on the other side of remedial or protective works or dams or other obstructions in boundary waters or in waters flowing therefrom or in waters below the boundary in rivers flowing across the boundary, the commission shall require, as a condition of its approval thereof, that suitable and adequate provision, approved by it, be made for the protection and indemnity of all interests on the other side of the line which may be injured thereby.

“The majority of the commissioners shall have power to render a decision. In case the commission is evenly divided upon any question or matter presented to it for decision, separate reports shall be made by the commissioners on each side to their own government. The high contracting parties shall thereupon endeavor to agree upon an adjustment of the question or matter of difference, and if an agreement is reached between them, it shall be reduced to writing in the form of a protocol, and shall be communicated to the commissioners who shall take such further proceedings as may be necessary to carry out such agreement.”



THE HORSESHOE FALLS



A PART OF THE FALL

CHAPTER XII

GENERAL WATER-POWER DEVELOPMENT

Many Projects Have Been Financial Failures. An Eminent Engineer States That There are not Five Large Water Power Plants in the United States That Are Successful Investments

AGITATION against the diversion of water for the creation of electrical current has been one of the features of the great power development that has taken place in this country in the past quarter of a century, on the theory that natural scenery will be injured or wholly destroyed. Only a few people can live on scenery, while a great number are materially benefited by the use of power.

Speaking recently upon the tremendous value of water power, Hon. Franklin K. Lane, Secretary of the Interior, in the cabinet of President Wilson, said in part:

“Water-power is the most valuable natural resource—one might almost say the greatest asset—of the United States. Its future is unknown; it is incalculable, because water-power is the one natural resource that is inexhaustible; it replaces itself, which coal and oil do not, and it can be transmitted at slight expense and for long distances.

“Water-power can do more than any one thing to lower the cost and raise the standard of living; it is the root of agricultural wealth; it is the key to the industrial life of the future and it is essential to our national defense. The policy of the government toward water-power is a matter that affects the welfare of every man, woman and child in the United States and in which every citizen should take an interest.

“Few people realize how vital water-power is to our defense. The United States is going to prepare itself to protect democracy

against any enemy that may assail it. We have here in this country a kind of government that we believe in, a kind of government that will make a higher class of man than has yet been produced, and if it be necessary, we will fight for the opportunity to prove that theory.

"This war has proved that one of the essential things is preparedness, to have the necessary resources, to have the chemicals, the minerals, the metals, the benzol, which is the foundation of high explosives; the copper, which is indispensable for the casing of the shells and for the manufacture of ammunition; the gasoline that flies the airship and runs the submarine and without which the entire automobile transport of armies would break down.

"Now there is no country in the wide world that is as rich in natural resources as the United States, and no country that can prepare itself for self-defense so easily or so quickly, and no country that, having girded up its loins for the fight, can be as formidable as the United States."

One of the great questions in the United States at the present time is that of the conservation of our natural resources. It has a far-reaching import to the people of the country, and from a financial standpoint its extent is inestimable. Closely allied with the general question, of course, is that of the utilization of our water-power resources. Legislation dealing with the subject is now pending in the Congress of the United States. A bill has passed the House of Representatives and is now pending in the Senate to provide for the development of water-power and the use of public lands in relation thereto. Hearings before the Committee on Public Lands and the Committee of Interstate and Foreign Commerce of the House of Representatives brought out a volume of facts, figures and general statements upon this very broad subject. Water-power, of course, has been in use for many years by means of the more or less crude water wheels, but the electrical development from water-power is a decidedly modern affair. The latter really had its inception where the greatest quantity of water-power exists—Niagara Falls. Not only was the Niagara development the first and greatest, but it has been the most successful financially.

The Congressional hearings brought out that in many cases the electrical power developments have been first-class grave-

yards for capital. To the Committee on Interstate and Foreign Commerce of the House of Representatives, Mr. Hugh L. Cooper, a consulting engineer of Stamford, Conn., made the statement that he had been the author of something like eight hundred thousand horse-power in designs which have been built in different parts of the country during twenty-five years. He then took up the matter of the large number of water-powers in the United States that have been bitter disappointments to the investors. As proof of his assertion regarding these disappointments, he filed with the Committee a list of over 506,000 horse-power which have been built in the United States in the last ten years, representing an expenditure of around \$100,000,000, which were financial failures. In each instance there was a receivership, or some form of reorganization. There were fifteen plants in this list, with miscellaneous small water-power plants, and they are located in a dozen states. In the list of fifteen, the smallest capacity is 4,000 horse-power, and the largest 80,000 horse, with several of them developing over 50,000 horse-power each. All of these plants were built after the great Niagara installation had been put in and proven to be a success financially. There are five great electric-power plants at Niagara now developing an aggregate of 600,000 horse-power, and it is estimated that the total investment in them is \$60,000,000. Nearly all of the power now developed from the Falls of Niagara is marketed. There is where the electric furnace is chiefly operated, and many of the customers of the power companies are large consumers, one concern taking 75,000 horse-power, another 60,000. In explanation of the financial failure of so many electric-power projects, it is stated that the development and application of water-power to economic uses is one of the most highly organized and intricate specialties of modern times. No one approaches it successfully, either technically or commercially, except the experienced and highly-trained specialist.

Engineer Cooper made a further statement to the Congressional committee that you cannot find in the United States five water-powers of any considerable size—meaning 25,000 horse-power or over—which you can speak of as successful investments, and concerning which you can go to a banker and tell him they are successful investments in water-power. He also

spoke of the long campaign in the public press against water-power people in general, which has caused the public to feel that the water-power situation is pregnant with the trust idea that franchises have been grabbed, and the people been robbed thereof, whereas no greater fallacy was ever perpetrated by a well-meaning people. He further said that important cases could be cited where the statement was promulgated that another raid had been made upon the public, and another water-power had been stolen, when the facts have been afterwards proven by the expenditure of millions of dollars that Congress should have been petitioned to grant gold medals in recognition of these so-called plunderers for the conservation of a small amount of coal at a great private cost. The water-power business, as applied to electric transmission, is not much over twenty-five years old. It started at Niagara in 1890 when The Niagara Falls Power Company turned the first sod for its tunnel 200 feet deep and 7,400 feet long under the city of Niagara Falls, connecting the upper with the lower Niagara River. The general power development business had to go over a long experimental road wherein vast fortunes have been lost. The company mentioned above has invested over \$25,000,000. A considerable portion of this amount was for experiments. For some of the companies which have failed, dams have cost two and three times as much as good, sound engineering experience in other lines of work, but inexperienced in water-power work, thought they would cost.

In recent years, since the question has become of such universal interest, various governmental organizations have been created to deal with the matter of water power, water supply, forestry, etc. In New York State there was the Water Supply Commission, which was succeeded by the Conservation Commission. There is also a National Conservation Commission, and the Secretary of the Interior, a Cabinet officer, deals with the subject generally. A vast amount of statistical information has been collected. The matter of floods has an important bearing upon the subject. The National Conservation Commission says that: "The direct yearly damage by floods since 1900 has increased steadily from \$45,000,000 to over \$238,000,000." The damage in eight months, from January first to August first, 1908, was \$237,000,000 to buildings, goods, bridges, roads,

real estate and railroads. The United States has 52,630 square miles of water area as against 125,755 square miles in Canada. Water-power is dependent primarily upon precipitation. Of the annual rainfall, one-half is evaporated, one-third runs off through or under the ground, and eventually reaches the sea; one-sixth joins the ground water or is taken up by plant structure. It is estimated that if all the moisture in the upper one hundred feet of ground were collected, it would equal a lake seventeen feet deep, or about seven years of rainfall.

While Canada has a water area more than double that of the United States, much of it is shallow, which affects the power possibility. The water-power development in Canada in 1910 amounted to 1,016,521 horse-power, of which there was 532,266 horse in the Province of Ontario. The Province of Quebec came next with 300,153 horse-power. British Columbia had 100,920 horse. The largest users of this power were paper and pulp industries, taking 158,051 horse-power. Canada has a different system of handling its water-powers than has been in vogue in the United States. For a power plant installation it usually charges the nominal sum of ten dollars for the first and second years, and then twenty-five cents or fifty cents per horse-power per year, with a minimum payment of \$100 to \$1,500. The leases run from ten to twenty years. The usual estimates of water-powers run from 1,000 to 7,000 horse-power. This leasing system began in 1901. Canada has a Conservation Commission which has done very thorough work in the matter of collecting information.

Since the Niagara Falls electrical power plants were installed, the Province of Ontario established the Hydro-Electric Commission, which purchases electricity from the Ontario Power Company and distributes it to the various municipalities. The Province of Ontario is bonded for four million dollars for that purpose. The Commission purchases not less than 8,000 horse-power and up to 100,000 horse-power of the Ontario Company at \$9.40 per horse-power at the power station if over 25,000 horse-power is taken, at 12,000 volts. The transmission line operates at 110,000 volts. The construction work cost the Province \$3,500,000. The various municipalities pay the Commission \$9.40 per horse-power plus four per cent of the construction cost, which is an annual amount sufficient to create

a sinking fund to pay for construction cost in thirty years. In Toronto the current costs \$18.10 per horse, which is the price to the city; the consumer pays more, and in Seaforth, Ontario, \$41.25 per horse. The distance is a large factor. In the eastern municipalities the cost is as high as \$55.38 per horse, the price at Lansdowne.

The general importance of water-power is shown by figures. Figures are said to be dry. In this instance they are not. In 1880 the United States census showed that the total water-power in use in this country amounted to 1,225,379 horse-power. The same authority in 1905 showed there were 20,996 water wheels developing 1,647,964 horse-power. When the census was taken in 1909 the water wheels were developing 1,807,439 horse-power. Inasmuch as the cost of generating hydro-electric power is less than half what steam-power costs, it can be seen how important it is to turn waste water energy into electric current. Besides the great lessening in the cost there is the added advantage of no smoke and no dust, and the further fact that the electricity is always ready to be turned on. Something of what the electrical business now means is shown by the fact that the General Electric Company, the great manufacturer of electrical supplies, has an authorized capital stock of \$105,000,000, and that on December 31, 1913, it had assets of \$144,000,000.

To illustrate the extent and diversity of water-power development in the United States, it can be said that there are now three plants in the State of Arizona with a capacity of 16,100 horse; 112 plants in the State of California with a capacity of 1,061,494 horse; 62 plants in the State of Colorado with a total capacity of 121,358 horse; 38 plants in the State of Idaho with a total capacity of 221,318 horse; 26 plants in the State of Montana with a total capacity of 357,084 horse; 8 plants in the State of Nevada with a capacity of 63,590 horse; 2 plants in New Mexico with a capacity of 10,000 horse; 26 plants in the State of Oregon with a total capacity of 183,008 horse; 44 plants in the State of Utah with a total capacity of 84,351 horse; 45 plants in the State of Washington with a total capacity of 746,840 horse, and 6 plants in Wyoming with a total capacity of 83,840 horse. For these eleven far western and southwestern states, therefore, 370 plants have a capacity of 2,949,000 horse. All of the power

produced by these 370 plants equals only about half of the potentiality of the Falls of Niagara, and the total of 379,239 horse developed in the six states of Arizona, Colorado, Nevada, New Mexico, Utah and Wyoming is far short of the 600,000 horse-power now being developed at Niagara Falls.

For the eleven States cited above, it is estimated that water power developments could be installed which would produce an additional minimum of 7,220,000 horse-power and 11,652,000 horse-power if storage were used. For the first total 2,144,000 horse would be in the State of Washington, 1,349,000 in Idaho, and 1,250,000 horse in Oregon.

It is estimated by officials of the forest service that about 12,000,000 horse-power can be developed in the national forests on the basis of low water conditions with consideration, however, to some storage sites. It is roughly estimated, therefore, that installation of water wheels aggregating 18,000,000 horse-power capacity may reasonably be made on power sites of the public domain on the basis of low water conditions, and that this may be increased to 29,000,000 horse-power if all storage facilities are utilized. In addition there is, of course, a large amount of water power that can be developed without utilizing lands of the public domain.

That is one side of the matter. There is much possible water power in this country. How much can be developed profitably? Along with the power, there must be a market for it. The electric furnace is a great consumer of electric current. It has made Niagara Falls the electro-chemical manufacturing center of the United States. Niagara Falls is also a center for the production of aluminum, abrasives, graphite and air fertilizer or cyanamid. The American Cyanamid Company built its first plant at Niagara Falls on the Canadian side. This industry is established in practically every country of Europe and in Japan, but there is no plant in the United States, owing to power and other conditions. This industry has passed the experimental stage and promises to be a tremendous one. It is officially stated that in less than six years nearly \$60,000,000 has been invested in factory building and in the development of water power for the operation of electric furnaces used in the fixation of atmospheric nitrogen as a fertilizer, but there has been no development in this country. In explanation of the business it is stated that

cyanamid, or lime nitrogen, competes directly with sodium nitrate, or Chilean saltpeter, and that during thirty-one years, beginning with 1879, the industries and the agriculture of the world have paid a tax of over \$425,000,000 to Chili. On every ton of Chilean saltpeter shipped from Chili there is an export duty of \$11.16 per ton. From this one source sixty per cent of the Chilean revenues are derived. The official figures show imports of nitrate of soda from Chili for 1913 to be 625,835 tons, valued at \$21,630,811. To indicate the great value of sodium nitrate to Chili it is related that the Chilean Senate offered a prize of \$2,500,000 to the inventor of a process which will completely extract the nitrate contained in the raw material called caliche or Chilean saltpeter, which contains from fifty to seventy-five per cent of sodium nitrate. The direct effects resulting from the successful fixation of the nitrogen in the atmosphere as a fertilizer through the operation of the electric furnace is the immediate relief and encouragement in agriculture, the increased demand for and value of farm lands, the increase in the food supply and the reduction in the high cost of living.

The European war has made this subject of far greater consequence. Germany has had her supply of nitrates from Chili cut off and must depend upon getting nitrogen from the air. If the United States should become involved in a great war, and its enemies should cut off its supply of Chilean nitrates, this country would have to extract from the air the nitrogen necessary to make powder. Besides being essential for explosives and fertilizer, nitrogen is the essential of many drugs, the source of anilin and coal tar dyes, and is used extensively in metallurgy and all the arts. It forms a part of nitre, ammonia, and nitric acid. It is stated that in the year before the European war broke out, the United States imported 600,000 tons of nitrates, costing \$21,000,000.

It is only in recent years that the process of separating nitrogen from oxygen and storing it for mechanical use has been successful. The first factory of the kind was established in Niagara Falls, but was not a commercial success. Later, the cyanamid plant was established at Niagara Falls, Ontario. Cheap water power to produce electricity at low cost is necessary, for vast quantities of high electric current have to be used, and when this must be generated by steam power, the cost is pro-

hibitive. It is electricity that precipitates the nitrogen. In Norway the process was first used by subjecting air in tanks to electric sparks. Water power is plentiful in Norway, and at a nitrogen-producing plant at Riunken 150,000 horse-power is drawn from one waterfall. It is said that the largest nitrogen-producing plant in the world is at Odda, Norway, whose capacity is 2,000,000 tons of cyanamid a year. In Germany, a few years ago, it was discovered that when lime and coke were fused in an electric furnace, the resultant calcium carbide has the property of drawing nitrogen from the air. Another way of obtaining nitrogen is in liquefying air by freezing. At Notodden, Norway, is a nitrogen plant in which the electric arc precipitates nitrogen in the air in the form of nitric oxide. Modern explosives would be impossible except for nitric acid. Gun cotton is made by soaking cotton in sulphuric and nitric acids, and washing it. Benzine, vaseline, glycerine and other coal tar products, are turned into explosives by nitrifying them.

Hence, the very great importance of a much larger development of water power in the United States. It is needed for the creation of electric current. Preparedness against war calls for it.

Germany lacked nitrates, but recognized her deficiency years ago, and her military experts combed the whole world until a process was discovered by which nitrogen can be drawn from the air, deposited in lime, and shipped with as little trouble as if it were in bricks. Water-power and air and lime were all that Germany needed, and by years of patient toil she so perfected the process that the day came when she knew that if England corked up every port, cut off every outside source of supply, she could turn the waters of her streams that run idly to the sea, and the boundless air above them into an inexhaustible supply of nitrates.

Owing to agitation against water-power development, on the plea of alleged destruction of natural scenery, Congress has failed to permit one institution that was ready to invest \$20,000,000 in a plant, to use water that flows past two great cliffs in the West. Water-power is as essential to the future growth and development of this country as is air to the life of the physical body. Water-power is the most valuable of all our national resources. The United States has withdrawn and reserved a

large number of dam and reservoir sites, without which the water is useless, because these dam and reservoir sites are essential to the production of water-power.

With reference to the Niagara Falls water power development, it should be kept in mind that not one of the electro-chemical, abrasive, aluminum, graphite and other concerns now using a large amount of electric power, was in operation at the time that the Niagara power development was initiated.

Set off against the great possible market for cheap electric current are the many great and discouraging financial failures in connection with power developments. In addition to the cases already cited, a statement was made in the House of Representatives that the successful blocking of six water-power bills saved the government at least \$25,000,000 because it was disclosed that all six developments would not equal in capacity what would be considered by conservative hydro-electric engineers even a second-class development, and that they would show a horse-power cost so high as to make it impossible for them to compete with coal. Under the present general dam law only three important hydro-electric developments have been completed: at Keokuk on the Mississippi River, at Hales Bar on the Tennessee River, and at Lock 12 on the Coosa River. The Mississippi River Power Company has developed 120,000 horse-power at Keokuk, which can be increased to 200,000, and the cost of the installation is stated to be \$8,000,000 above the estimate. The cost of developing less than 50,000 horse-power at Hales Bar was estimated at \$3,000,000 and reached \$9,000,000. In each case complaint is made about inability to sell the power. The facts confirm the statement made earlier in this article that water-power development, if successful, must be highly organized and handled by experts.

In the State of New York the waste energy of water-power is equal to that produced by the consumption of 11,000,000 tons of coal annually. There is estimated to be 1,500,000 horse-power in the State unused, and yet New York leads all other States in the amount of developed water-power. The New York Water Supply Commission survey, as long ago as 1908, showed the installation of 829,558 horse-power. Maine was next then with 466,774 horse, but California has now supplanted Maine. The New York Water Supply Commission sent engineers around

the State to examine each important water-power site. There is over 100,000 horse-power in the canal system, and over 100,000 acres of swamp lands in the State.

It has been recently estimated that the undeveloped water-power in the State of New York is equal to seventy per cent of all forms of power, except water-power now used in the State for manufacturing purposes; that at the present cost of generating steam-power it would have a value of more than \$50,000,000 annually if used in manufacturing; that it would cost less than half what steam-power costs, and would be a boon equal to a reduction in the price of coal to less than \$1.50 per ton; that this power, cheap and inexhaustible, transmitted electrically, could be carried hundreds of miles from its source and delivered for heating and lighting in homes and kitchens, for manufacturing, pumping, irrigation and all forms of labor on farms, and for transportation.

CHAPTER XIII

THE FIRST SUSPENSION BRIDGE

The Work was Started by Flying a Kite Across the Niagara Gorge,
Carrying a String. The First Vehicle was an Iron Basket

IN this volume is shown an engraving of the first railroad suspension bridge constructed over the Niagara River and completed in 1855. This bridge was principally used by the Great Western Railway, the predecessor of the Grand Trunk Railway, which uses the steel arch bridge which succeeded the suspension bridge in 1897. The only suspension bridge across the Niagara River now is at Lewiston, and that bridge was moved from Niagara Falls in 1899. On January 16, 1856, an international railroad festival or banquet was held at the Mont-eagle Hotel in the village then called Suspension Bridge, which hotel had just been completed, overlooking the new bridge and which still stands as a cold-storage warehouse. Preparations for this banquet were made by a formidable committee of arrangements, representing fifteen railroad companies, as follows: New York Central, New York and New Haven, Hudson River, New York and Erie, Canandaigua and Elmira, Canandaigua and Niagara Falls, Western Railroad of Massachusetts, Great Western Railway, Michigan Central, Erie and Ontario, Ontario and Simcoe, State Line, New York City, New York and Philadelphia, and the Albany and Northern, also the American Express Company. Many prominent men of Niagara Falls, New York State and other states, were also honorary members of this committee.

Niagara pioneered in bridge-building as well as in power-development, and the first suspension bridge with its wide

span was the most remarkable structure of its kind in the country.

The manner in which bridge-building started here was told during his life-time by the venerable Theodore G. Hulett, who supervised the construction of several smaller bridges, and who died a few years ago at the advanced age of ninety-five years, after being a resident of Niagara Falls for a long period of years. He was a justice of the peace for thirty years and was known to everybody as Judge Hulett. His description of the interesting work is herewith given:

"The engineer stated in detail his plan of construction. First, to provide some means of crossing the gorge with men and tools without crossing at a ferry at Lewiston, five miles below, thus saving ten miles' travel for each desired crossing. His plan was to erect two towers, one on either side, twenty-five feet in height, and to suspend a wire cable of thirty-six strands of No. 10 wire from the top of these towers, with about thirty feet deflection, and upon which to place a yoke with grooved rollers at either end, and from which to suspend a cage of sufficient capacity to accommodate two men, and this cage to be drawn across from side to side by means of a stationary windlass on either side of the bank. The first thing to be settled was the size, form and material of which this cage should be constructed. The engineer proposed this cage to be made of wood, and instead, I suggested iron. The engineer's objection to iron was its weight. In answer, I suggested that I thought one of iron could be made of less weight and more secure than one of wood. To test this proposition, the engineer made a plan of his wooden cage, and carefully weighed, by figures, its weight. I then made a plan of a basket made of iron, which was also weighed and found to be ten pounds lighter than wood. 'We will have it iron,' exclaimed the engineer, 'provided we can get it made.' I assured the engineer that getting it made would present no difficulty, as I would make it with my own hands. The next interrogatory of the engineer was, 'What shall be its form?' We both at the time were sitting in rocking chairs of the same pattern. I requested the engineer to arise, and these two rockers were drawn close together, the engineer exclaiming, 'That is just what we want and will have.' Next in order was the construction of the cable upon which the basket was to travel. This cable was to be constructed of thirty-six

strands of No. 10 wire, each strand to be subjected to a uniform strain, and the thirty-six strands bound into a round form by being wrapped by a transverse wrapping of a small annealed wire at intervals of eight inches, each wrapping being about four inches in length. This cable was formed around an iron yoke or clevis at either end as a means of fastening to the rock. After the detail of making the cable was disposed of, then came the question of how to get it over. The engineer suggested offering a premium of ten dollars to the first boy who should successfully fly over the gorge his kite string and fasten its ends to a tree on either side. This premium brought a score of lads into the contest, and a boy by the name of Homan Walsh (who now resides in Lincoln, Neb.) was the successful winner of the prize, which was paid as soon as the kite string was secured on the bank of the stream. The following day a stronger line was drawn over by the kite string, and a rope of sufficient strength to haul over the iron cable was substituted. By means of this rope the iron cable was hauled across the river and its ends secured to the solid rock and placed upon the wooden towers. I made the iron basket and its attachments with my own hands, and it was placed upon the cable. A strong windlass, consisting of a wooden drum of about four feet in diameter, and so geared that one man at the crank could haul over any required load. One of these windlasses was placed on each bank, the draft rope passing around these drums at one end, and the other attached to the yoke from which the basket was suspended. This yoke was made of iron, with a grooved roller at either end that it ran upon, and the flanges astride the cable.

"The first passage of this basket was attempted to be made empty, but when almost across it suddenly stopped and the windlass on the opposite side would not bring it ashore. It could be drawn back, but not forward, and the basket was drawn back to the American shore. Engineer Ellett mounted the car, which was let loose from the tower, and which descended the down-grade with great velocity until its momentum was arrested by the up-grade on the opposite side, when the windlass on the opposite side was set in motion and hauled the basket with its passenger to the point of obstruction, which was found to be a spot in the cable that had been flattened when the cable was being hauled across, and to such extent that that exceeded the width of the groove in the roller, which caused the flange of the forward end

of the roller to rise upon the cable and its edge to sink between the expanded strands of the cable. The engineer saw the difficulty at a glance, and he soon remedied it by contracting the width of the cable, and the rollers passed over and the first passenger landed in safety across the gorge in this fairy basket. It was found that the groove in the rollers was too shallow and the tread too narrow to prevent undue friction on the transverse wrapping of the cable, and new and deeper-grooved rollers were substituted. This change made, this mode of transportation was complete, and it was used for that purpose for more than one year, and carried across the gorge more than 2,000 passengers. This cable was used until the preliminary bridge structure was completed, and then removed.

"The preliminary bridge was but a slight structure of eight feet (roadway) in width, with a railing made from ash wood of oval form, one and one-quarter inches by two inches, locked together at its ends, and the splice bound together by a fine annealed wire and woven into the suspenders of the bridge longitudinally. There were four of these on either side, one foot apart, which made a strong and safe railing five feet in height. This bridge was only intended as a scaffolding from which to build the platform of the intended railroad bridge. The mode of construction of this preliminary bridge was not only unique, but was attended by a thrilling incident, which will not be forgotten by those who witnessed it, or its recital uninteresting to those who did not.

"The first preliminary bridge was composed of four massive wooden towers, two on either bank, some eighty feet in height. There were four corner posts, two feet square, constructed of four timbers one foot square, each of different length and separated on their inner sides by an oak strip, and all bolted firmly together. The sections were united by each timber being of a different length, and thus built up to the top. There were cross beams twelve inches square running around the vertical posts at intervals of about eight feet and bolted firmly to the corner posts, and bracing timbers from each cross beam to the corner posts. These towers were fourteen feet square at the base, terminating at their top at six feet square. These towers were mounted by a wooden roller of eighteen inches in diameter and six feet in length, upon which the cables were to rest.

“The cables of this preliminary bridge were four in number, two on each tower. They were composed of about 120 strands of No. 10 wire, each wire having been stretched at an equal tension on the shore, with each wire passing around an iron yoke at each end as a means of anchoring the cables to the rock. These cables were wrapped transversely by small annealed wire at intervals of ten inches, each wrapping being four inches in length, the cable two and one-quarter inches in diameter. In getting these cables across, one end was anchored to the solid rock, a strong rope attached to the other end, which was connected with a powerful windlass on the Canada side, and by it the cable was hauled across the chasm and the ends anchored to the rock. This left a sag in the cable below the cliff of about eighty feet. By means of rope tackle these cables were lifted to the top of the towers to their final resting place, leaving the lowest point of deflection of the cables some fifteen feet above the level of the surface rock on either side. These cables were spread upon the wooden rollers on the top of the towers, four feet apart, and the transverse wrappings for about four feet at their apex removed for the purpose of leaving the wires flattened to give each strand of wire an equal tensile strength, and to enable the oil, with which they were kept painted, to reach each wire to prevent any possible oxidization of the wires, this being the greatest point of strain on the cables.

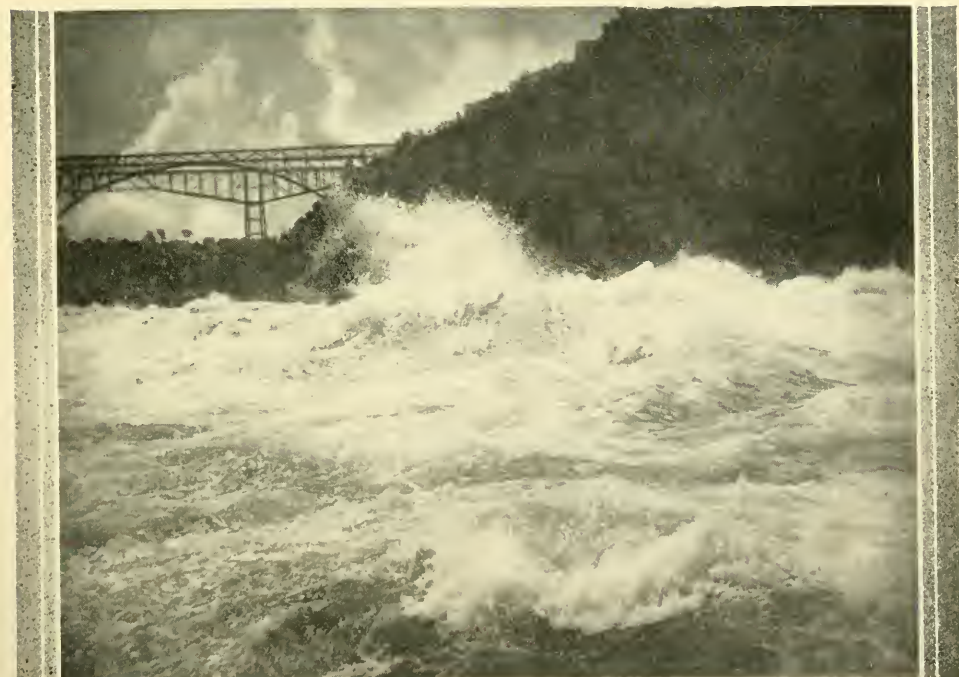
“Next in order were placed strips of pine-scantling, two by three, across the two cables on either side, and four feet in length, fastened with wire to the cables, so as to prevent the cables getting out of line, and a cross support for the suspenders, which were composed of two strands of No. 10 wire, each end of the suspender terminating at the bottom in a loop to receive the cross or needle beam of the flooring. As these suspenders and supports were shoved out, the floor was laid, which consisted of one-inch boards of two layers, each layer breaking joints. These temporary platforms of only four feet in width, were to be carried across from either side simultaneously until being united in the center, and when so united the platform at once assumed its intended form, a beautiful catenary curve to the cables and an upward curve to the flooring, each being governed by the calculation of the length of each suspending wire.

“Two separate and distinct bridges were thus thrown across,



VIEW OF THE RAPIDS

Looking up the river from the American Falls, and showing part of the Goat Island Bridge



VIEW OF THE WHIRLPOOL RAPIDS AND GIANT WAVE

Where Captain Webb, the great swimmer, lost his life, and showing Steel Arch and Cantilever Railroad Bridges



[A VIEW OF THE ORIGINAL TABLE ROCK, MADE IN 1837

after which they were brought together, side by side, and lashed firmly together, thus giving the supporting cables a lateral curve from twenty-four feet at the top of the towers to eight feet at the center of the bridge.

‘It was while these preliminary platforms were being carried out as above described that a terrific scene occurred. The northerly platform was completed and the other commenced on either side, the one on the Canada side almost one hundred feet from the bank, and on the American side about two hundred feet. There arose a sudden and terrific wind storm. As a first indication of it, a two-inch plank was lifted from the top of the tower and was being carried as a feather at the behest of the storm. Its effect on the bridge was that the unfinished part was swinging to and fro for one hundred feet, at last throwing that part on the Canadian side over and across the basket cable. There were two workmen on the Canada end of the structure at the time of the crash, who made their escape to the tower, but on the American side there were four men on the structure, only one of whom reached the shore, the three remaining having no other support than to firmly clutch the two No. 10 wires and resting their feet on the shifting flooring of the platform. Nothing could be done to rescue these men, until the violence of the gale subsided. When the gale had spent its violence, a short ladder, twelve feet long, was attached to the iron basket with ropes and a request for some one to volunteer to go out in the basket to rescue the men. A young man named William Ellis stepped forward and said, ‘I am your man.’ Ellis sprang into the basket, but before starting I instructed him that he, under no consideration, should bring but one man at a time, as it was impossible to estimate the strain upon the basket cable, as the weight of the entire Canada end of the bridge was upon it, but to take off the one farthest out, and return for the others. Ellis’ reply was, ‘all right.’ Out went the basket, passing the two unfortunates for the one farthest from the shore, the ladder was extended to the wreck, the unfortunate was eagerly watched until safely in the basket. The next unfortunate’s appeals were so pressing to be taken in that Ellis forgot his instructions and the second unfortunate was soon seen crossing the ladder into the basket. The third was reached and the ladder pushed out again, and he also was landed in the basket. The basket—the capacity of which was

but for two—was slowly drawn to the shore, laden with four stalwart men, and the four safely landed amid the shouts from the bystanders that silenced the raging elements.

“Under this temporary platform was built the wagon bridge of eight feet in width as above described. This road bridge was used as a carriage and foot way for two or three years, awaiting the change of hard times, and the railroad it was intended to accommodate should be completed. At last this event happened, and Engineer John A. Roebling, of Brooklyn Bridge fame, was engaged as engineer to complete the original design—a railroad bridge. Massive stone towers took the place of the original ones, and a railroad bridge and a carriage track beneath was erected by Mr. Roebling, which was used for years, and after all the woodwork of the structure was replaced by iron except the floors, which took place about fifteen years since by Engineer L. L. Buck, who about five years after substituted the massive iron towers for the stone towers erected by Engineer Roebling, which began to show signs of decay.

“The engineering skill of Engineer Buck was manifested by the substitution of these present iron towers for the stone ones removed, when it is known that this change was made without interfering with railroad crossing for but two hours.”

The following statistics give an idea of the vast amount of material in the great suspension bridge built sixty years ago, and nearly twenty years ago dismantled:

Length of span from center to center of towers	822 feet
Height of towers above the rocks, American side . .	88 “
Height of towers above the rocks, Canadian side . .	78 “
Height of towers above floor of railway	60 “
Height of track above water	258 “
Number of wire cables	4 “
Diameter of each cable	10¼ in.
Number of No. 9 wires in each cable	3,659
Ultimate aggregate strength of cables	12,400 tons
Weight of superstructure	800 “
Maximum weight cable and stays will support	7,300 “

The second suspension bridge, built near the Falls, fell during a great storm in 1889, was rebuilt and succeeded by the present steel arch. While the railway suspension bridge cost

about \$500,000, the lighter structure not used for steam cars, only cost about \$250,000. The span between the center of the towers was 1,268 feet, 446 feet longer than the lower bridge. The height above the surface of the river was 190 feet; height of towers above rock on Canadian side, 105 feet, and on American side, 100 feet. The base of the towers was twenty-eight feet square, and the top four feet square. The bridge was supported by cables composed of seven wire ropes each, which contained, respectively, 133 No. 9 wires. The weight of these wires per lineal foot was nine pounds, and the diameter of the cable, seven inches. The total weight of the suspended portion of the cable was eighty-two tons, net. There were forty-eight stays weighing fifteen tons net. The aggregate breaking strain of the cable is 1,680 tons.

CHAPTER XIV

NIGHT ILLUMINATION OF THE FALLS

Great Projectors Installed in the Gorge and on the High Bank Produced an Incomparable Scene in 1907—More Elaborate Permanent Illumination Proposed—Niagara in Literature

THIS is the age of efficiency. The stupendous advance in electrical science in the past quarter of a century has been paced by the harnessing of the Niagara River, which has already resulted in the development of over half a million horse-power. The scenic grandeur of the Falls of Niagara has thus far been largely a daylight spectacle. To be scenically efficient, the cataracts should be visible also at night. If by the current that they themselves produce, the Falls can be brilliantly illuminated during the night hours, the ideal is reached and perfection attained. And it can be done. It has been done. What should now be done is to install a permanent illumination. Just as the cataracts, as a daylight spectacle, have no counterpart in the world, so there would be a matchless riot of electricity here when the shadows have fallen on the earth. The Aurora Borealis, as we can see it, is a feeble gleam beside the sea of light that flashes out of the pitchiness of the night when the beams of billion candle-power projectors are turned upon the flood that pours over the Niagara cataracts. The electric projectors produce great billows of mist, giant waves of hurtling ferocity, and with the use of color screens, foam-crested waves of water run crimson and leap into violet, gold and green. The dark curtain of night is swung aside, and Niagara, illuminating itself, revealed.

Such illumination took place in the autumn of 1907, for a few weeks. It was a success. The then Mayor, Hon. Anthony

C. Douglass, advanced \$5,000 from his own pocket, which was afterward repaid to him by business people, to pay for the installation of the projectors and their maintenance. This illumination was a great success, and drew thousands of people to Niagara Falls at night. It showed the possibilities. It was temporary only. The projectors were designed and installed by W. D'Arcy Ryan of the General Electric Company of Schenectady. At the Panama-Pacific Exposition in San Francisco, in 1915, Mr. Ryan installed forty-eight great thirty-six-inch projectors, representing the forty-eight States of the Union, throwing their flood of light, but with no Niagara for a background. A project was launched to secure these projectors for permanent installation at Niagara Falls, and an organization was formed. The matter was so far advanced that the city of Niagara Falls, N. Y., placed \$25,000 in its budget toward the purchase price, and it was expected that the city of Niagara Falls, Ontario, and various public service interests would subscribe the balance. Owing to the war in Europe the matter of the sale was deferred, and finally the Russian government bought the projectors at a price double that for which they had been offered to the Niagara Falls interests tentatively.

At the time of the Falls illumination, in 1907, electricity representing 1,115,000,000 candle-power was turned upon the cataracts. There were twenty-one fifteen-inch projectors and fifteen thirty-inch projectors. The imagination can hardly grasp the meaning of one billion candle power. One million candle power is some light. In discussing electricity we talk about volts, amperes, watts and kilowatts. When we speak of electricity in terms of candle-power, our grandmothers who used tallow dips for light, would have a little better conception of what is meant than when we are talking in terms of volts, amperes and watts.

What has been proposed is to continue Nature's great show after night, and by its own momentum, directed by the skill of man. The cataracts ordinarily wrapped in the shroud of night, stand out dazzlingly distinct against the blackness of the grim rock cliffs.

In Service's ballad of the Northern Lights is found an eloquent description of the Aurora Borealis, from which the following excerpt is made:

"And the skies of night were alive with light, with a throbbing, thrilling flame, Amber and rose and violet, opal and gold it came.
It swept the sky like a giant scythe, it quivered back to a wedge;
Argently bright, it cleft the night, with a wavy golden edge.
Pennants of silver waved and streamed, lazy banners unfurled;
Sudden splendors of sabres gleamed, lightning javelins were hurled."

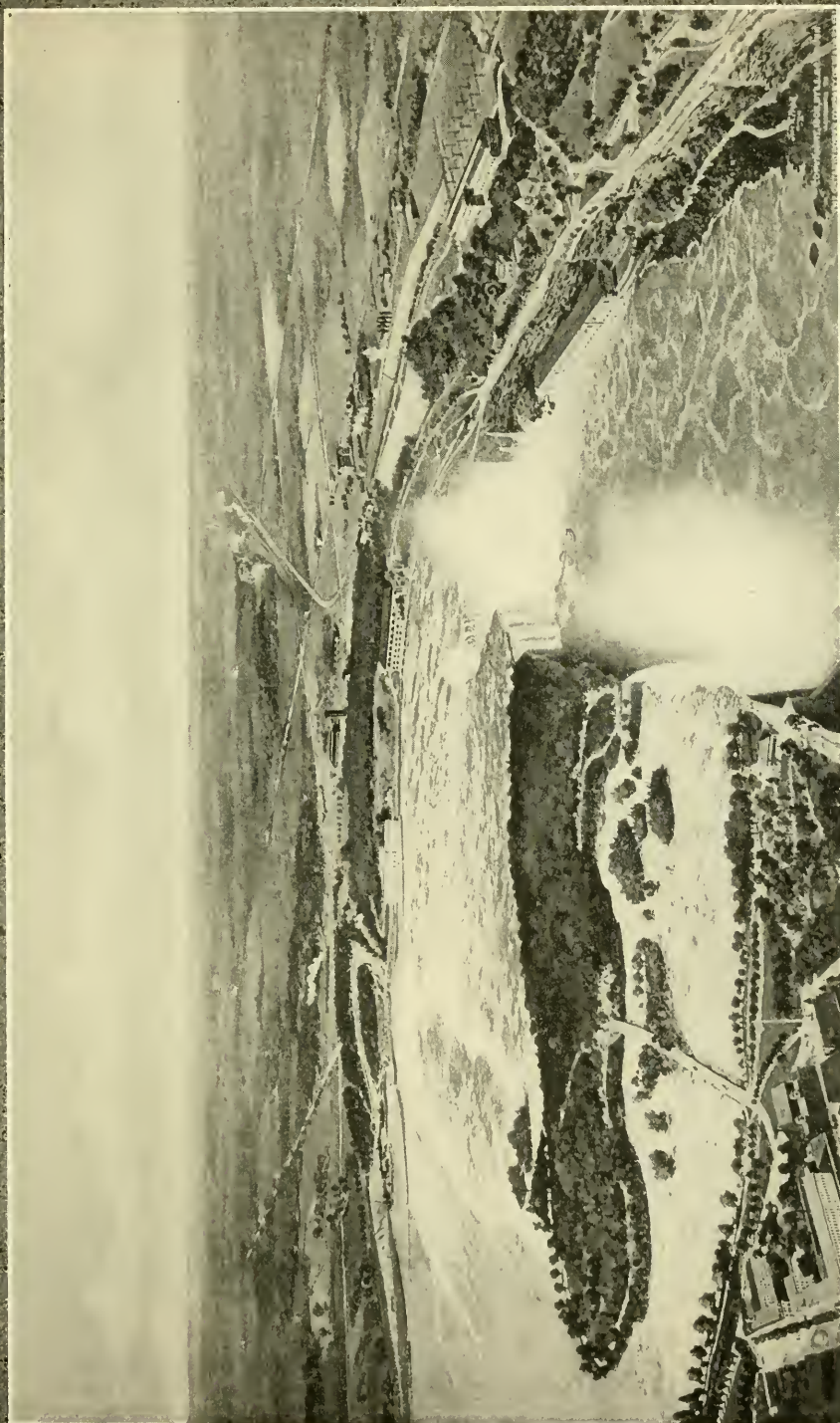
Service finally likens the spectacle in the sky to "the all-combining searchlights of the navies of the world." Niagara with such illumination as was that at San Francisco, pouring its flood of light upon it at night would be inimitable. The tongue halts at comparison.

In an article in the June, 1915, issue of the *National Magazine* of Boston, which was the first nation-wide reference to the subject, the author of this book said:

"If the forty-eight great electric projectors, that are one of the chief attractions of the Panama-Pacific Exposition at San Francisco could, after the Exposition is over, be brought to Niagara Falls and installed permanently, it would be the most appropriate disposition that could be made of them. The great cataracts would not only then be the greatest daylight spectacle upon the globe, but also a magnificent night spectacle that would thrill thousands of people, and illustrate, most effectively, the stupendous significance of conservation."

Lying between the State of New York and the Canadian Province of Ontario, on the boundary line dividing the two nations to which this great natural wonder belongs, the project has a distinct international aspect. It also has a distinct world interest. In 1912, State Senator Robert H. Gittins, of Niagara Falls, afterward Representative in Congress, passed through the New York Legislature a bill providing that the State should appropriate \$50,000 for the permanent illumination of Niagara Falls, contingent upon the Province of Ontario appropriating a similar amount. The bill did not become a law because of the failure of the Ontario authorities to co-operate.

It was estimated that the cost of an installation such as that at San Francisco would be from \$75,000 to \$100,000, and the annual cost of operation and maintenance in the neighborhood of \$7,000. When Niagara Falls is illuminated in the manner indicated, the spectacle will surpass what Service said of the Northern Lights:



BIRD'S-EYE VIEW OF NIAGARA FALLS
Showing power development on the Canadian side



NIAGARA ILLUMINATED AT NIGHT BY ELECTRICITY PRODUCED BY ITSELF

1891-1892
J. H. M. P.

"They rippled green with a wondrous sheen,
They fluttered out like a fan;
They spread with a blaze of rose-pink rays
Never yet seen of man."

It is true that no words, however appropriate, no combination of ideas, however felicitous, can do justice to Niagara, but from the time that the white man first saw the scene, poets and prose writers, many of them of national and even world-wide fame, have adorned literature with some of its most glittering gems as they recorded their impressions regarding Niagara. As an example of fine prose writing, listen to Charles Dickens, the great novelist:

"It was not 'till I came to the brink of the American Fall at Prospect Point that it came upon me in its full, mighty majesty. The Niagara has forever stamped upon my heart an image of beauty to remain there changeless and indelible until its pulses cease to beat forever. Oh, how the strife and trouble of daily life receded from my view and lessened in distance during the ten memorable days we passed on that enchanted ground! What voices spoke from out the thundering water! What faces, faded from the earth, looked out upon me from its gleaming depths; what heavenly promise glistened in those angels' tears, the drops of many hues that showered around and twined themselves about the gorgeous arches which the changing rainbows made. To wander to and fro all day, and see the cataract from all points of view; to stand upon the edge of the great Fall, marking the hurried water gathering strength as it approaches the verge, yet seeming, too, to pause before it shot into the gulf below; to gaze from the river's level up at the torrent as it came streaming down; to climb the neighboring heights and watch it through the trees and see the wreathing water in the rapids hurrying on to take its fearful plunge; to linger in the shadow of the solemn rocks, two miles below, watching the river, as stirred by no visible cause, it heaved and eddied and awoke the echoes, being troubled yet far down beneath the surface by its giant leaps; to have Niagara before me, lighted by the sun and by the moon, red in the day's decline and gray as evening slowly fell upon it; to look upon it every day, and wake up in the night and hear its ceaseless voice; this was enough.

“I think in every quiet season now, still do those waters roll and leap, and war and tumble all day long; still are the rainbows spanning them a hundred feet below; still when the sun is on them do they shine and glow like molten gold; still, when the day is gloomy, do they fall like snow, or seem to crumble away like the front of a great chalk cliff, or roll down the rock like dense white smoke. But always does the mighty stream appear to die as it comes down, and always from its unfathomable grave arises that tremendous ghost of spray and mist which is never laid; which has haunted this place with the same dread solemnity since darkness brooded over the deep, and that first flood before the Deluge—light—came rushing on creation at the word of God.”

The following beautiful lines relating to Niagara, were written by Mrs. Lydia M. Sigourney:

NIAGARA

Flow on forever, in thy glorious robe
Of terror and of beauty. Yea, flow on,
Unfathomed and resistless. God hath set
His rainbow on thy forehead, and the cloud
Mantled around thy feet. And He doth give
Thy voice of thunder power to speak of Him
Eternally—bidding the lip of man
Keep silence, and upon thine altar pour
Incense of awe-struck praise.

Earth fears to lift

The insect trump that tells her trifling joys
Or fleeting triumphs, 'mid the peal sublime
Of thy tremendous hymn. Proud Ocean shrinks
Back from thy brotherhood, and all his waves
Retire abashed. For he hath need to sleep,
Sometimes, like a spent laborer, calling home
His boisterous billows, from their vexing play,
To a long dreary calm: but thy strong tide
Faints not, nor e'er with failing hearts forgets
Its everlasting lesson, night nor day.
The morning stars, that hailed Creation's birth,
Heard thy hoarse anthem mixing with their song
Jehovah's name; and the dissolving fires,
That wait the mandate of the day of doom
To wreck the Earth, shall find it deep inscribed
Upon thy rocky scroll.

Lo! yon birds,
How bold, they venture near, dipping their wing
In all thy mist and foam. Perchance 'tis meet
For them to touch thy garment's hem, or stir
Thy diamond wreath, who sport upon the cloud
Unblamed, or warble at the gate of heaven
Without reproof. But as for us, it seems
Scarce lawful with our erring lips to talk
Familiarly of thee. Methinks, to trace
Thine awful features with our pencil's point
Were but to press on Sinai.

Thou dost speak
Alone of God, who poured thee as a drop
From His right hand—bidding the soul that looks
Upon thy fearful majesty be still,
Be humbly wrapped in its own nothingness,
And lose itself in Him.

CHAPTER XV

SOME POWER PROJECTS

Various Charters were Granted by the Legislature, and Work was
Actually Commenced on Two Canal Schemes—Latest Plan
Contemplates the Creation of 2,000,000 Horse-Power in
the Lower River

CONTEMPORANEOUS with the electrical power development plants at Niagara Falls have been several projects for creating electrical current out of the waters of the Niagara River, that have not been consummated.

One of the first of these was that to take water from the river in the southern part of the village of LaSalle, and carry it across in a canal to the Lewiston escarpment, several miles east of the lower river, where the fall would create the power. From thence the water was to be carried in a canal or tail-race and discharged into the river. This was known as the Model-town project, and its chief promoter was William T. Love. His idea was to build a model city on the plain below the Lewiston escarpment, and he secured options upon hundreds of acres of farm lands in the towns of Lewiston, Porter and Wilson. Considerable local money, and some from a distance was actually invested and lost in this scheme. From the New York Legislature was secured a charter said to have been the most liberal of all the power development charters that have been granted by the State. Work was actually commenced both upon the canal and upon the model town or city as it was first called. Several stone buildings for manufacturing purposes, and quite a number of residences, were erected, and the village still exists, the post-office being known as Modeltown. The excavation of this canal was also started at LaSalle, and piles of dirt and a deep hole remain there. The enterprise collapsed

during the panic of 1893, but attempts have been made since to revive it. With the enactment of the Burton law, in 1906, its consummation was effectually prohibited, but just previous to the introduction of the Burton bill into the Congress, plans for one of the most ambitious power developments ever attempted had been made, which contemplated the use of a part of the Love plan. Various people lost money in the Love scheme, and Mr. Love himself lost all that he had, and he afterwards refused to sell his company's charter except upon a basis that would permit the payment in full of all creditors and stockholders.

In 1906 one of the greatest corporations in the country had, as stated above, made plans for a big power development and the establishment at Niagara Falls of large manufacturing concerns. The power canal was to run from LaSalle to the Devil's Hole, where a great head is to be secured. The plans were drawn and inspected in Niagara Falls the very week that the Burton bill was introduced, but this piece of legislation put a quietus upon the project.

The Love modeltown project, although chimerical in some of its details, was regarded on the whole as quite feasible, but some mistakes in attempting to finance it and the financial panic that swept over the country in the early nineties ended it.

Another power development project that contemplated the use of Niagara River water was the so-called Lockport canal scheme. A charter was also secured from the Legislature for this, and there was much agitation upon the subject. Water was to be led from the Niagara River, and the fall at Lockport utilized with the eighteen-mile creek that discharges into Lake Ontario at Olcott Beach as the tail-race. An excavation for a fore-bay west of Lockport was started, but this scheme went the way of the Love canal scheme except that the charter was acquired by the Ontario Power Company through its auxiliary corporation, the Niagara, Lockport and Ontario Power Company, which now transmits electric current to Lockport and as far east as Syracuse.

A third power plan was to utilize the rapids of the lower Niagara River. The Lower Niagara River Power Company was incorporated, and secured a charter from the Legislature for that purpose. It planned to blast a tunnel through the rock,

starting just north of the railway steel arch bridge and discharging the water taken from the river there into the river again at a point near the Devil's Hole. By this plan a fall of ninety feet could be secured. It was estimated that 200,000 electric horse-power could thereby be developed. The tunnel would be about one and three-quarters miles long. The company purchased 1,300 feet of river front at the head of the Whirlpool Rapids, for the purpose of intakes to its tunnels, and it also purchased a tract of land at the Devil's Hole on which to locate its power houses and for other purposes. A large portion of the right-of-way for its tunnel from the point of intake to the point of discharge was secured. The Burton law, prohibiting further diversion of the water of the Niagara River for power purposes, prevented the consummation of this project, although it was claimed not to have been the original intention of the Congress to have this law apply to the lower river.

At the time this proposed legislation was under consideration, a representative of the Lower Niagara River Power Company appeared before the Committee on Rivers and Harbors, in the House of Representatives, and explained the plan of development of this company. Members of the committee said to the representative of the company that the legislation they sought to enact would not affect the power development in the lower Niagara River; but what they sought to obtain was to prevent further diversion of water from the Niagara River that would affect the scenic beauty of the Falls.

The representative of the power company called their attention to the fact that the language of their bill would prohibit diversion of any water from the Niagara River, thereby affecting the lower river the same way it would affect the upper river. The representative of the power company stated that if they would amend the bill by inserting the word "above" in front of the word "Falls," so if the bill were passed it would prohibit only the diversion of water above the Falls, that would be satisfactory, and the committee assured the representative of the power company this would be done, but the bill came up for consideration in the closing hours of the session of Congress and was passed without the amendment being made.

As time went on, Congress became unwilling to have the Burton law amended in that respect through fear that if the

matter came up for consideration, other amendments might be offered to change the law in regard to diversion above the Falls.

The charter of the Lower Niagara River Power Company has been acquired by the Ontario Power Company, which has been understood to be ready to go ahead with this development whenever the Federal government would lift the ban upon the use of the waters of the lower river. The general opinion is that there is no good reason why power should not be developed there. The effect upon the scenic grandeur of the rapids could hardly be appreciable, and the power houses that have been erected in this vicinity have not detracted from the beauty of the landscape.

Among other suggestions for power development from the Niagara River, which, however, have gone no further than the suggestion stage, is one for the erection of a bridge from the American to the Canadian shore, above Goat Island, with current wheels attached, and another for placing apparatus directly under the American fall, which plan would avoid the objection of diverting water from the upper river. This plan would use water that had already passed over the fall, and return it to the lower river.

The greatest of all power development plans, either consummated or proposed, is that recently promulgated by Hon. Peter A. Porter and T. Kennard Thomson, a New York engineer. Mr. Porter presented the plan to the joint committee of the New York Legislature investigating the power situation. The Porter-Thomson plan contemplates the production of the stupendous total of 2,000,000 horse-power in the lower river. And more than that—"Not only do we propose the greatest power development in the world," asserts Mr. Porter, "but we have a plan to place Niagara Falls on the map as a lake port and bring to a realization the dream of a ship canal from lake to lake around Niagara Falls." In no wise will this mar the scenic grandeur, Mr. Porter contends. For the power development will be located, not above the Falls, where all the trouble has been centered, but a good six miles below. The Rapids would have to be eliminated, but that is the sole loss which Niagara would suffer and the power plants above the Falls would not be in any way affected.

The plan includes the erection of a colossal dam across the

gorge, three-quarters of a mile south of Lewiston. The river is very narrow here, and natural conditions offer the best possible opportunity for a dam of great strength. The dam would be at least ninety feet in height, a little less than one-third of the height of the steep banks of the gorge. Such dam would impound the waters of the river straight back to within about a mile of the Falls. This would submerge the present Whirlpool Rapids, the Whirlpool and the entire lower rapids beneath a long, narrow lake. The lower end of this lake, pouring over the proposed dam, would create a smaller Niagara. The drop of the river from the Falls to Lewiston, seven miles below, is about one hundred feet, providing at least, according to Mr. Porter's estimate, for the development of 2,000,000 horse-power. The scheme also includes a ship canal to connect Lake Ontario with Lake Erie, a project which has been dreamed of for many years. Mr. Porter holds that it would be feasible to place a lift lock at the foot of the proposed ninety-foot dam in the gorge, which would carry lake vessels up to the higher level from Lake Ontario. This would permit them to steam direct to the City of Niagara Falls. Then, at the foot of the Falls themselves, would be two enormous lift locks, one on the American and one on the Canadian side of the cataract. The American lock would lift vessels up to the high bank. There they would find passage in a short ship canal to the upper reaches of the river, and thence on to Buffalo and the great Lakes. On the Canadian side, the lock would lift the vessels to the top of the first bluff. There a second lock would carry them to the higher level and thence by canal to the Welland canal.

The scheme would cost, Mr. Porter estimates, about \$100,000,000.

"It is an enormous proposition," declares Mr. Porter, "but the State of New York is expending \$150,000,000 on the Erie canal. The United States government will soon have spent \$500,000,000 on the Panama Canal. Great Britain has expended many, many millions to dam the Nile. The Roosevelt dam has cost millions, to be sure, but it has brought under cultivation thousands of acres hitherto barren.

"This plan positively will not affect the Falls of Niagara. It will, without a doubt, however, wipe out the present scenery of the lower river. But the creation of 2,000,000 horse-power for

the encouragement of industries over a widespread area—over at least a radius of 500 miles in the very near future—would compensate many times over for the loss of the scenery of those lower rapids, and would be for the benefit of humanity. It would afford light, heat and power and occupation for many thousands of citizens of this State.

“I should never ignore the wisdom of the everlasting preservation of the great cataract of Niagara, the most famous scenic sight on earth unharmed and unharnessed. It is not necessary to mar Niagara’s grandeur. Above the Falls today, and without detracting an iota from their beauty, the waters have already been diverted under authority, and today are developing 500,000 horse-power.

“The rapids below the Falls clear down to Lewiston, a distance of seven miles, are glorious. But they contain potential possibilities for the production of power to be used directly for the good of humanity, which will yield far greater benefits, direct daily benefits, to many thousands, than by letting that power flow to waste.

“It seems to me that it is a sinful waste for the State of New York to allow all that power to continue undeveloped and unused. I do not believe that New York State ought any longer to allow such source of benefit to its people, such a source of taxation and revenue, to be disregarded. The great cry all over the land today is for the use, development and conservation of the water powers, not forgetting the widely advertised maxim, ‘Safety first.’

“This one development down the gorge would save an annual consumption of something like 50,000,000 tons of coal—an enormous and unjustifiable economic waste.”

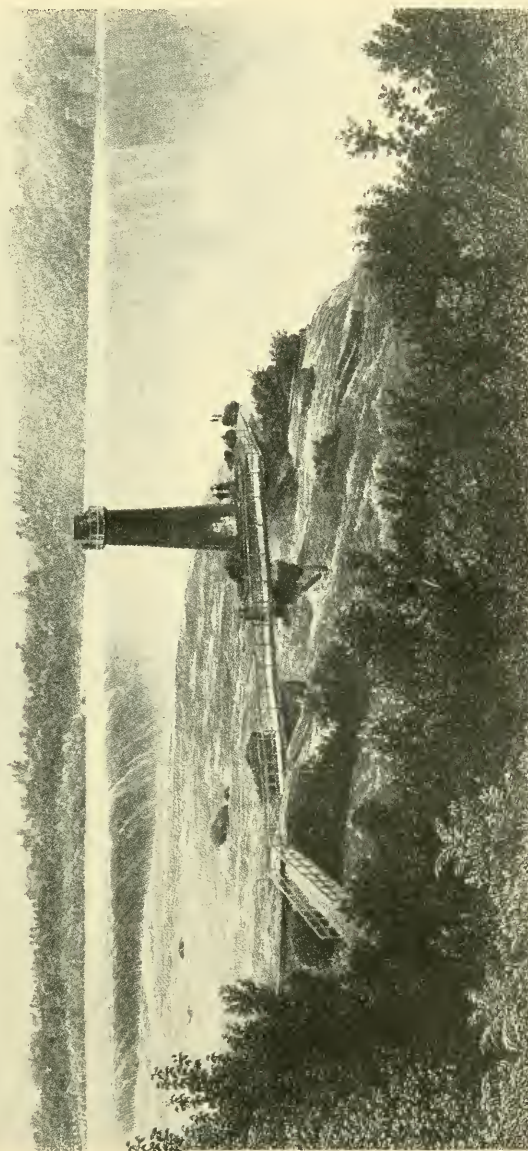
Mr. Porter suggests that the State of New York and the Province of Ontario undertake the project jointly or grant the right of the undertaking to a private corporation, deriving some financial benefit from the development by a fixed tax on the amount of power developed.

CHAPTER XVI

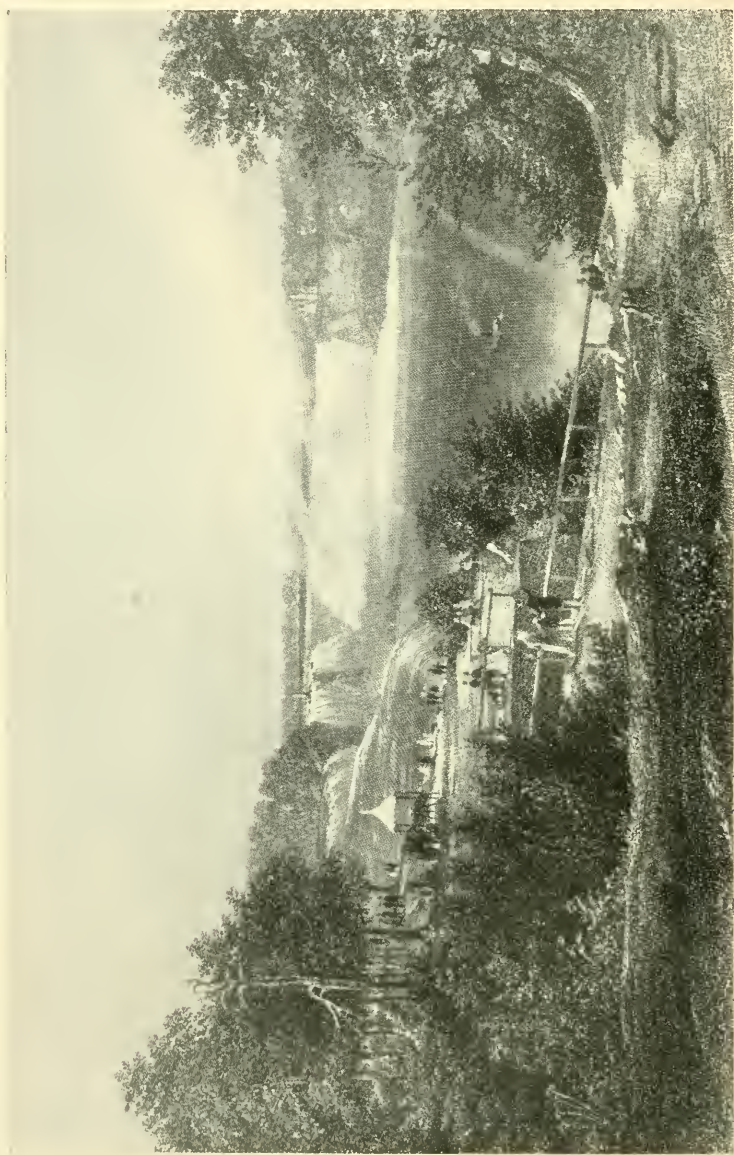
A GREAT ELECTRIC RAILWAY SYSTEM

The International Railway Company has about 400 Miles of Track.
With the Niagara Gorge Railway it Operates the Niagara
Belt Line

IN 1892 the Niagara Falls and Suspension Bridge Street Railway Company, which operated a horse-car line through and between the villages of Niagara Falls and Suspension Bridge, along Falls, Second, Ontario and Main Streets, and Lewiston Avenue, was electrified, and some of the first electric trolley cars in the country were operated over that route. At about the same time, Burt Van Horn promoted the construction of a single track road called the Niagara Falls Whirlpool and Northern Railway. This was a short line connecting with the first-named railroad and running to the Devil's Hole, which is just north of the city line of Niagara Falls. In a sense, this was the beginning of the great International Railway system, which is one of the most comprehensive electric railway systems in the country, and which operates all of the electric cars on the immediate Niagara frontier except the Niagara Gorge Railway and the Niagara, St. Catharines & Toronto line, which runs out of Niagara Falls upon the International tracks. Soon after the construction of the Niagara Falls, Whirlpool & Northern Railway, Mr. Van Horn became associated with Hon. W. Caryl Ely, a prominent lawyer of Niagara Falls, and a man of state-wide reputation, in the construction of the Buffalo & Niagara Falls Electric Railway of which Mr. Ely was president and Mr. Van Horn general manager. Later, in the great trolley merger that was first called the International Traction Company, they held the same official positions. This system includes all of the



TERRAPIN TOWER WHICH WAS REMOVED MANY YEARS AGO



AN EARLY VIEW OF NIAGARA FALLS FROM PROSPECT POINT. RAINBOW IN THE DISTANCE

electric railroads in Buffalo, the Tonawandas, Niagara Falls and Lockport, together with a line to Olcott Beach, afterward constructed, and the Niagara Falls Park & River Railway, which runs from Chippewa through Niagara Falls and Queensston, Ontario, and crosses the suspension bridge at Lewiston. This bridge, formerly known as the upper suspension bridge, was moved from Niagara Falls and the upper steel arch bridge was constructed on its site. The system also extends easterly from Buffalo to Lancaster and Depew. The International Railway Company operates altogether about 400 miles of tracks, with electric power furnished by The Niagara Falls Power Company.

The International Railway Company was organized February 19, 1902, as the successor of about twenty-five street railway and bridge companies. Its stock is owned by the International Traction Company, a majority of whose stock is held in turn by the United Gas & Electric Corporation of New York. According to the report of the Public Service Commission of the second district, this consolidation includes the Buffalo Railway Company, the Buffalo & Niagara Falls Electric Railway Company, the Buffalo, Tonawanda & Niagara Falls Electric Railroad Company, the Niagara Falls & Suspension Bridge Railway Company, the Buffalo & Lockport Railway, the Lockport & Olcott Railway, the Niagara Falls Suspension Bridge Company, the Lock City Electric Railway Company, the Buffalo, Kenmore & Tonawanda Electric Railway Company, the Buffalo Street Railway Company, the Buffalo East Side Railway Company, the West Side Railway Company, the Buffalo & Tonawanda Electric Railway Company, the Buffalo Traction Company, the Buffalo, Bellevue & Lancaster Railway Company, the Niagara Falls Whirlpool & Northern Railway, the Elmwood Avenue & Tonawanda Electric Railway Company, the Electric City Railway Company, Crosstown Street Railway Company, the Lewiston Connecting Bridge Company, the Niagara Falls Park & River Railway Company, the Clifton Suspension Bridge Company, and the Queenston Suspension Bridge Company.

The officers of the company are now: President, Edward G. Connette; vice-president, Edgar J. Dickson; secretary and treasurer, George W. Wilson.

The system is the second largest in the State, outside of New York City, the New York State Railways standing first.

The railway company has a capital stock of \$16,000,000 and a mortgage indebtedness exceeding \$22,000,000. The Public Service Commission Report for 1914 shows that this railway company had 2,373 employees to whom it paid during the year a compensation of \$2,415,260. Its organization is not excelled in efficiency and *esprit de corps* by any other railroad system in the United States. That the company requires a large equipment is shown by the fact that the Public Service Commission reports it as having 785 cars, with 188 held under lease. This was in 1914—and the total revenue of the International Railway Company for that year was given as \$6,701,105, while the total operating expenses were \$4,005,138. Other interesting statistics with reference to the operation of this system show the average length of road operated to be 222.37 miles; the operating revenue per mile of road \$30,507; the operating expenses per mile of road \$18,011; the operating ratio, 59.04 per cent; the total number of revenue car miles, 21,606,889; number of fares, 124,010,975, averaging 5.28 cents each; number of passengers, fares and transfers, 176,091,493; and the total number of ton miles of freight, 3,049,067.

Outside of New York City the Niagara frontier is one of the largest passenger producing territories in the country for an electric railroad system, inasmuch as not only does the International Railway Company serve the city of Buffalo with its population of about half a million people, and other cities of the locality, but it is estimated that the annual pilgrimage of sight-seers to Niagara Falls is from 1,000,000 to 1,500,000 people, and the traffic between Buffalo and Niagara Falls is largely increased for that reason.

With its line from Buffalo to Niagara Falls, and its belt line around the inimitable Niagara Gorge, the International Railway Company furnishes one of the most beautiful trips in the world. The panorama that greets the eye of the passenger through the car window as the big trolleys skirt the shore of the upper Niagara River is one of the finest in the land. The region traversed is one of extraordinary diversity and remarkable contrast. After arrival at Niagara Falls, a trip around the Niagara belt line unfolds to the traveler the beauties and grandeur of the American and Horseshoe Falls, the great Whirlpool Rapids, the stupendous Gorge and the magnificent scenery that has made the Niagara

locality world-famous. The route of the belt line is across the steel arch bridge just below the Falls, up the river on the Canadian side, to Table Rock, and thence back on the high bank to Queenston, where the cars cross the company's suspension bridge to Lewiston and return to Niagara Falls along the water's edge over the tracks of the Niagara Gorge Railroad.

The development of this electric railway system is one of the most notable in the country, and nowhere has the transformation been as marked as in the city of Niagara Falls. The Niagara Falls & Suspension Bridge Railway Company was incorporated on October 21, 1882, and operated with horses as motive-power until 1892, when the road was electrified. Niagara Falls and Buffalo were among the first cities in the country to have electric railroads. Instead of the two or three miles of tracks of the original line, there are now some twenty miles of tracks in Niagara Falls, lengthy connecting lines having been constructed on Niagara, Sugar, Pine, Nineteenth and Twenty-fourth Streets, and Ontario Avenue.

That part of the International Railway system connecting Buffalo and Niagara Falls north of the Tonawandas was constructed in the public highway, known as the River Road, up to a point called Edgewater where a trestle was built over the steam railroad tracks there, and the trolley line was carried further inward. Owing to the constant increase in the traffic, the company several years ago projected a new line on a straight and private right of way between Buffalo and Niagara Falls, and this project is about to be consummated. It is expected that an express service can be established on the new line that will make the time between Buffalo and Niagara Falls fifty minutes. The Public Service Commission has granted a franchise for the new line, which will have two passenger tracks and a freight track. The right-of-way has been secured and construction will be well along by the summer of 1916. The new line will be one of the fastest and best equipped in the country.

A part of the belt line, which is not owned by the International Railway Company, is the Niagara Gorge Railway, which operates between Niagara Falls and Lewiston on the American side of the river, near the waters' edge for much of the distance. It is truthfully called the most magnificent scenic route in the world, for, with the towering cliffs above, the trip may be said to have a double interest.

On the belt line trip, as the car crosses the bridge, one of the most perfect views of the Falls is unfolded, and on its course up the river on the Canadian side this magnificent view of the American and Horseshoe Falls is ever present, always from a new point of vantage, until the cars reach Table Rock, almost at the brink of the Horseshoe Falls. Here can be seen the wild and plunging waters of the Canadian rapids before they leap into the chasm. Then the car describes a loop and runs down the Canadian side of the river to Queenston. There on the heights where it can be seen many miles away, is the great monument, 185 feet high, erected in 1853 and rebuilt in 1870, to the memory of the famous British General, Sir Isaac Brock, who fell in the Battle of Queenston Heights in the War of 1812. General Brock was killed at the foot of the mountain, however, and there, before the car crosses the river to the American side, is seen a cenotaph erected by the Prince of Wales, afterward King Edward VII of England, on his visit to Canada in 1860. Coming up the river on the Niagara Gorge Railway, or "Great Gorge Route," a historic place called the Devil's Hole is passed. At this point, in 1763, a British caravan and company of soldiers were ambushed and massacred by the Indians, the entire company being driven over the cliff and all lost save one.

The Niagara Gorge Railway not only furnishes an unsurpassed scenic route, but its history is of unusual interest. The promoter and the man who furnished most of the money to build it was the late Capt. John M. Brinker of Buffalo, who organized the Niagara Falls & Lewiston Railroad Company, as the present corporation was first known. Captain Brinker projected this railroad some years before he actually constructed it. Some people laughed at him and regarded his plan as not feasible and, as a matter of fact, almost impossible of accomplishment.

The construction of this road on a less ambitious scale was attempted by the Niagara Falls & Whirlpool Railway Company, which was organized in January, 1886. This company proposed to build a railroad "commencing at a point near the foot of the inclined railway which extends from Prospect Park to near the easterly margin of Niagara River, such point of beginning being a short distance below the foot of the American Falls on the American side of the Niagara River in the county

of Niagara, and running thence (by the most direct and feasible route) along the easterly margin and near the water's edge of said Niagara River, about 400 feet below and northerly from the foot or outlet of the portion of Niagara River commonly known as the Whirlpool."

This company got into the courts because its right to condemn property desired to be taken was questioned. The reason assigned was that the proposed railroad would have no termini. It lost its case in the courts. The matter came up when an application was made to the Supreme Court for the appointment of a commission to appraise lands proposed to be taken, and the claim was made by opposing interests that the taking was not for public use, within the meaning of the law, because the proposed road did not connect at either end with a highway, because it could not be reached except over the lands of the State or the lands of private owners, and that there could be no habitation along the line of the road, and no traffic, or commerce, or business except in conveying passengers over the road to see the river and whirlpool, and returning them again to the point from where they started. It was further claimed that the business would practically all be done in the four months of June, July, August and September, and that the road could not be operated in the winter because of the ice and snow. Later experience proved the fallacy of that claim. However, the matter finally got to the Court of Appeals, and the decision of the lower courts against the railroad company was affirmed in February, 1888.

To avoid the legal obstacles which the original company encountered, Captain Brinker organized the Niagara Falls & Lewiston Railroad Company, whose name was changed later to the Niagara Gorge Railway Company, and the road built by it connects with a highway in Niagara Falls and one in Lewiston, so that no question was raised concerning the company's right to condemn property required for a right-of-way.

It was a big engineering feat to build the Gorge road. A gradual descent from the city of Niagara Falls into the Gorge had to be excavated through the rock, and rock excavation was necessary at many points along the route in order to lay the double tracks. Captain Brinker and his associates finally succeeded in completing the novel railroad, and its operation began in 1895. In 1896 it secured an entrance into the city over the tracks of

the Niagara Falls & Suspension Bridge Railway Company, now a part of the International Railway Company. To secure its right-of-way, the company purchased elevators used for conveying sightseers into the Gorge and other valuable property. The total cost of the seven-mile railroad is understood to have been over \$800,000. As a result of its construction and operation much pleasure and instruction have been afforded to hundreds of thousands of people who have journeyed over the "most magnificent scenic route in the world."

The present officers of the Niagara Gorge Railway Company are: President, Capt. J. T. Jones, of Buffalo; vice-president and general manager, Bert L. Jones of Buffalo; superintendent, Eldred E. Nicklis, of Niagara Falls.

CHAPTER XVII

A COUNTY WITH THREE CITIES

That is Another One of the Distinctions that Niagara Has—A Great
Lumber Traffic—The Various Ship Canal Projects—When
Steamers First Came to the Falls

IN writing this book the author has not attempted to present the political history of the county which bears the famous name of Niagara. This book is regional in its character rather than a county history. The big things relating to the Niagara Frontier, which are of not only local but national and international interest, are here set forth. Other books published in 1878 and since have given the political history of Niagara County and the intimate affairs of its people. This county has given many able and important men and women to the State and to the nation, and much pertaining to its agriculture, business and social life is of more than ordinary interest, but space forbids dealing with these matters at length in a publication of this kind. An effort has been made to write concerning things of broad significance and to place upon the printed page some information with which perhaps the general public is not entirely familiar. The preface partially outlines the contents of "Niagara—Queen of Wonders." Always there is in mind Nature's greatest work, the

"Grand, sublime, supreme, supernal wonder."

Then it is told what man has done, is doing and might do with it for the benefit of the race, without losing sight of the universal desire for the preservation of the scenic grandeur of the world's greatest cataracts and the marvelous river of which they are the crowning feature.

Something has been told of the political history of the city of Niagara Falls, which is the largest city in the county and in western New York outside of Buffalo and Rochester. The county of Niagara contains three cities, and until recent years was the only county in the State of New York that did contain three cities. It is made up otherwise of twelve townships, and the agricultural part of it surpasses in excellence most other portions of the State. Especially does Niagara County surpass its sister counties in fruit growing. One village railroad station, Barker, received for shipment over 1,700 carloads of farm products, mostly apples, peaches and other fruits, in the fall of 1915.

The oldest city in the county is Lockport, deriving its name from the remarkable set of locks on the Erie Canal there. It is the county seat of the county. It was originally planned to have the county seat at Lewiston, and the main street in that village is one of the widest in the county. Niagara County was erected April 2, 1821, and Lockport was incorporated as a village by act of the Legislature March 26, 1829. On April 11, 1865, the Legislature made Lockport a city. The state census in 1875 gave the city a population of 12,553. By the state census of 1915, the population was nearly 19,000. The city contains many beautiful homes and wealthy people, and there is considerable manufacturing there with power from a race-way fed with surplus waters of the Erie Canal. Electric current from Niagara Falls is also now used in Lockport. The principal manufactured products are print paper and wood pulp, indurated fibre, flour, machinery, saws, cotton-batting, glass, building blocks, etc.

One of the most substantial and at the same time unique organizations of its kind in the state or in the country is the Niagara County Pioneers Association, which for thirty-eight years has called together large crowds of people annually. The association was formed at Olcott Beach on September 13, 1877. Each year since then a great picnic has been held there, easily the chief event of its kind in western New York. The men who have presided over the destinies of the association have been the most substantial and honored citizens of the county. The men who have annually addressed it have been either the leaders of public thought in Niagara County, or men of state and national reputation. In recent years, the latter have been the rule. The association has always been kept upon a high plane.

The list of men who have served as president and who have delivered the annual addresses is a roll of honor and should be preserved as such. Here it is:

1878—Hon. John VanHorn of Newfane, President. Hon. George W. Holley of Niagara Falls, speaker.

1879—Franklin Spaulding of Niagara Falls, President. Hon. Burt VanHorn of Newfane, speaker.

1880—Franklin Spaulding of Niagara Falls, President. Rev. John S. Bacon of Niagara Falls, speaker.

1881—Hon. Alfred Holmes of Lockport, President. Rev. K. P. Jarvis of Somerset, speaker.

1882—Hon. Lyman A. Spalding of Lockport, President. Moses S. Hunting of Lockport, speaker.

1883—Hon. Lyman A. Spalding of Lockport, President. James F. Fitts of Lockport, speaker.

1884—Hon. Guy C. Humphrey of Somerset, President. Charles H. Squires of Lockport, speaker.

1885—Hon. Guy C. Humphrey of Somerset, President. A. Augustus Porter of Niagara Falls, speaker.

1886—Col. George L. Moote of Porter, President. Hon. Richard Crowley of Lockport, speaker.

1887—Col. George L. Moote, President. Charles H. Squires of Lockport, speaker.

1888—John G. Freeman of Lockport, President. Hon. Edmund L. Pitts of Medina, speaker.

1889—John G. Freeman of Lockport, President. Hon. John E. Pound of Lockport, speaker.

1890—Hon. John Hodge of Lockport, President. Rev. George W. Powell of Lockport, speaker.

1891—Hon. John Hodge of Lockport, President. Hon. Daniel N. Lockwood of Buffalo, speaker.

1892—Elisha B. Swift of Cambria, President. Rev. C. W. Camp of Lockport, speaker.

1893—Elisha B. Swift of Cambria, President. Dr. E. W. Gantt of Lockport, speaker.

1894—Benjamin F. Felton of North Tonawanda, President. Hon. Richard Crowley of Lockport, speaker.

1895—Hon. Lee R. Sanborn of Sanborn, President. Hon. William A. Sutherland of Rochester, speaker.

1896—Hon. Lee R. Sanborn, President. Prof. Edward Hayward of Lockport, speaker.

1897—Hon. John E. Pound of Lockport, President. Hon. Jonas W. Brown of Lockport, speaker.

1898—Hon. John E. Pound of Lockport, President. Edward J. Taylor of Lockport, speaker.

1899—Hon. Thomas V. Welch of Niagara Falls, President. Gov. Theodore Roosevelt, speaker.

1900—Hon. Thomas V. Welch of Niagara Falls, President. Hon. William F. Mackey of Buffalo, speaker.

1901—Hon. Peter A. Porter of Niagara Falls, President. Lieut. Richmond Pearson Hobson, speaker.

1902—Hon. Peter A. Porter of Niagara Falls, President. Gov. Benjamin B. Odell, speaker.

1903—Hon. Peter A. Porter of Niagara Falls, President. Hon. David Bennett Hill, speaker.

1904—Willard Hopkins of Lewiston, President. Hon. Richard Crowley of Lockport, speaker.

1905—Dr. William Q. Huggins of Sanborn, President. Hon. Peter A. Porter of Niagara Falls, speaker.

1906—Hiram K. Wicker of Lockport, President. Hon. Cuthbert W. Pound of Lockport, speaker.

1907—Edward T. Williams of Niagara Falls, President. Lieut.-Gov. Lewis S. Chanler of New York, speaker.

1908—John P. Brown of Royalton, President. State engineer and surveyor Frederick Skeene, speaker.

1909—H. Seymour Ransom of Ransomville, President. Edward T. Williams of Niagara Falls, speaker.

1910—H. Seymour Ransom of Ransomville, President. Hon. Herbert P. Bissell of Buffalo, speaker.

1911—Edward T. Williams of Niagara Falls, President. Attorney-General Thomas Carmody, speaker.

1912—Edward T. Williams of Niagara Falls, President. Hon. Peter A. Porter of Niagara Falls, speaker.

1913—George S. Gooding of Lockport, President. Gov. William Sulzer of New York, speaker.

1914—George S. Gooding of Lockport, President. Miscellaneous program.

1915—Hon. William Richmond of Lockport and Hon. Elton T. Ransom of Ransomville, President. Secretary of State Francis M. Hugo of Albany, speaker.

Another unique and very interesting organization in Niagara County is the Niagara Frontier Historical Society, which has its headquarters in the Carnegie Library at Niagara Falls. It was founded about twenty years ago, and has a large collection of relics related to the early history of the Niagara Frontier.

Still another historical organization is the Niagara Frontier Landmarks Association, which has its headquarters in Buffalo, but which is made up of delegates from all of the frontier communities. The association has placed tablets at various points along the Niagara River, marking spots where important historic events have occurred.

The third city in Niagara County is North Tonawanda, which was formed from the town of Wheatfield, and which in the past

few years has been a rapidly growing community. In fact, there are two cities at that point, with only Tonawanda Creek between them, but the creek is the line between Niagara and Erie counties, hence the two cities are in different counties, the one in Erie County being called Tonawanda. The Tonawandas are virtually the western terminus of the Erie barge canal, for, while the canal starts at Buffalo, that city is south of the Tonawandas. These cities have also long been celebrated as one of the leading lumber ports of the United States, being rivalled only by Chicago.

The lumber business at the Tonawandas dates back to 1873. The receipts by lake that year were 104,909,000 feet. They increased every year, and ten years later were 398,871,853. In 1889 the enormous total of 676,017,200 had been reached, and in 1890 this total was exceeded when the figures were 718,650,900. At the same time the shipments of lumber eastward over the Erie Canal from the Tonawandas increased from 89,273,285 feet in 1873 to as high as 820,149,423 feet in 1888. Later figures are also interesting, but, of course, the lumber business is on the wane now because of the depletion of the timber supply.

North Tonawanda has now become a manufacturing city of considerable importance. Its industries now produce musical instruments, bolts, sleds, forges, radiators and boilers, motor boats, steel, roofing, paper, etc.

The proposition to connect Lakes Erie and Ontario on the United States side of the line by constructing a canal from the navigable waters of the Niagara River above the Falls to the navigable water below is as old as the project to utilize the waters of the river for the development of power. At different times during more than a hundred years it has engaged the attention of civil engineers and capitalists. The first company that proposed to construct this canal was incorporated in 1798, and a survey was soon afterward made. At the present time, one hundred and eighteen years later, a bill is pending in the Congress appropriating \$200,000 for the purpose of making another survey. Actual construction work upon no one of the numerous ship canal projects was ever commenced.

In 1808, pursuant to a resolution passed by the United States Senate, the Secretary of the Treasury submitted an elaborate

report upon the subject of roads and canals in which he suggested a ship canal around Niagara Falls. Another ship canal company was incorporated in April, 1823, composed of Niagara Frontier people. The canal was to run from a point above the Falls to the heights near the village of Lewiston. A survey was made by Nathan Roberts, an engineer connected with the Erie Canal from the beginning of the construction of the great waterway. The survey was from the mouth of Gill Creek, two miles above the Falls, to the brow of the Lewiston mountain. Engineer Roberts estimated that a ship canal over that route could be constructed for about \$1,000,000. Naturally the ship canal project was not only of local, but of national interest. In 1836 Captain W. G. Williams, a topographical engineer of the United States Army, was sent to make surveys for a ship canal around Niagara Falls, which was largely over the same route as that surveyed by Mr. Roberts, but the canal at this time was estimated to cost \$3,000,000. Again in 1863 the Niagara ship canal project came before the President and the Congress, and a new survey was ordered in 1868. Several lines were run and reports made to Congress, but the project failed of authorization by a small majority.

In this connection it is interesting to note that on July 4, 1857, an Independence Day celebration was held at Niagara Falls which was characterized as the "occasion of the opening of the navigation to Niagara Falls." This was really the opening of Port Day, which is the head of the hydraulic canal. On that day there was received at that point three steamers, styled as the pioneers, in opening steam navigation from Lake Erie to Niagara Falls some two miles lower down than had ever before been attempted. The boats were the *Cygnets*, the *Swallow*, and the *Alliance*. Upon that occasion, Stephen M. Allen made a very interesting address in which he referred to the hydraulic canal, then seventy feet wide and ten feet deep, as "sufficient to sustain any amount of navigation at present used upon the lakes." Proceeding with his address, Mr. Allen said, with reference to the harbor:

"The harbor which has been opened today is one of the most spacious, and the channel one of the most safe in the river. It consists of an outer and inner basin, forming a perfect geological wonder. The inner one covers an area of about one hundred

acres, more than one-half of which will average nine feet of water, and may be deepened by dredging to eleven feet before reaching the rock. It lies within what is called the Goat Island and Grass Island bars, which shoot by each other at the entrance of the inner harbor, leaving a space of about four hundred and fifty feet between, with a passage out of ten and a half feet of water. The bar which runs up from Goat Island is rock, and gradually sinks from a depth of water of one foot at Goat Island to a point intersected at right angles by the rock bar running from the shore below the mouth of the canal in water of three feet depth. The cross bar from the American shore striking the Goat Island ridge in shoal water, reduces the current at the pier where we now lie to about three miles per hour, which can be fully checked and made dead water, if desired, by running breakwaters across from below. The navigable space to this inner basin opposite this pier has been demonstrated by the coming in today of three steamers at once, all rounding to and swinging in at different points of the basin at the same time. Grass Island and the bar which reaches below, as well as that from its head, is composed entirely of sand and reaches and averages eleven and a half feet in depth. The outer basin contains about one thousand acres, and the water varies from thirteen to twenty feet in depth. It is bounded below by the right-angled branch of the Goat Island bar for about half a mile, the water averaging along the inner edge of its crescent form about four feet deep, and then loses itself in the British channel. The upper boundary of both basins is formed by the Schlosser bar, which stretches across the river for about a mile, over which for its whole length, with one exception, the water averages in different spots all the way from one to three and a half feet. This exception is through the channel down which we have passed today for the first time, and which has lately been buoyed out. It is about three hundred feet wide, and the lowest water we have ever found with the line in its center is seven and a half feet. The bar is very narrow in this spot, being not more than one hundred feet wide; and the bed seems to be filled with loose rock which can be removed, it is thought, without blasting. Immediately above and below this bar there is ten feet of water, reaching to the harbor below and to Buffalo above. The outer basin is reached both from this channel and from the British channel with perfect

safety, as you have seen today; the current in each approach from the foot of Navy Island being less by two miles per hour than the entrance to Chippewa Creek, which has been open to all kinds of navigation for many years."

The channel of the Niagara River to the port of Niagara Falls has now been deepened to fourteen feet.

Now, Niagara County contains over 100,000 population, with more than 42,000 people in the city of Niagara Falls. The Niagara frontier is the center of tremendous interest in not only present day developments, but in historical events covering a period of about two and one-half centuries. At Niagara Falls is Nature's greatest storehouse of energy, and what that energy has done and can do for mankind has been partially portrayed in this book. That the future will produce a tremendous advance for the Niagara locality there cannot be a question of doubt. Of all the greatness of the Niagara frontier that is or is to be, the great cataracts are the foundation. As Lord Morpeth of Ireland wrote of Niagara:

"There's nothing great or bright, thou glorious Fall,
Thou may'st not to the fancy's sense recall:
The thunder-riven cloud, the lightning's leap,
The stirring of the chambers of the deep,
The tread of armies, thickening as they come,
The blast of trumpet, and the beat of drum!
Oh! may the wars that madden in thy deeps,
There spend their rage, nor climb the encircling steeps,
And, till the conflict of thy surges cease,
The nations on thy banks repose in peace."

IN CONCLUSION

While it may be true that "of the making of books there is no end," the fact remains that in the writing of each book there must be an ending. The author of "Niagara—Queen of Wonders" has endeavored to fulfill its purpose as indicated in the Preface. Its readers must be the judges.

In the chapters which make up this publication some of the important early history of the Niagara frontier is presented; the majestic grandeur of the famous Niagara River and Cataracts as the world's greatest natural spectacle is portrayed; some of the descriptions and references in both prose and poetry, reproduced; the great work of the Empire State in making the enjoyment of Niagara's scenery free to all mankind forever, set forth; the details of the installation of the most stupendous hydro-electrical power development on earth, recorded; the immense Niagara power plants described; the erection of the lusty young city of Niagara Falls and its remarkable industrial progress, outlined; trenchant facts related pertaining to the various unique industries in Niagara Falls that were not in existence when the power development started and that were made possible by the electric furnace; the universal use made of the products of Niagara power explained; the great question of Niagara diversion and of the conservation of natural resources discussed; the tremendous necessity for a larger use of water power emphasized; the splendid spectacle of the night illumination of the cataracts touched upon; the long dormant Niagara Ship Canal project revived; the interesting details of the construction of the first railway suspension bridge across the Niagara Gorge, given; a glance at the other two cities in the county and at Niagara County at large included; a tribute to the men who made possible the power development and the industrial supremacy of the Niagara frontier, offered; and, then, the book is embellished with the finest collection of ancient and modern Niagara River scenes and power plant pictures ever published.

What man has done here at Niagara, with Nature as his

hand-maiden, can be favorably compared with the work of man in all lines of endeavor down through the centuries. Along with the discoverers, the great captains in military achievement, the inventors, statesmen, the great lights in literature, scientists and captains of industry should be ranked the men who initiated and piloted to successful consummation the harnessing of Niagara Falls and the inauguration of the electrical age.

Those men whose genius, courage, scientific attainments, financial ability and foresight made possible the initiation and consummation of the stupendous hydro-electrical development of power at Niagara Falls have an enduring title to fame. The pioneers of power development set upon an eternal throne at Niagara Falls electricity to be king of the twentieth century, and to accomplish more for the race than kings, princes, or potentates, and really, the great work of the subtle current created by Niagara's perpetually moving flood has only commenced. Just as the institutions that formed the foundation of the United States and which contained in substance all that the ages had done for human government, were organized in a forest with cultivated mind acting upon uncultivated nature, so did science harness Niagara that only before had charmed the senses, and put its resistless and ceaseless current to the greatest use of humankind.

